Advant® OCS
with Master software

Structure Builder

Version 3.2

User’s Guide

3BSE 013 932R201

Use of **DANGER**, **WARNING**, **CAUTION**, and **NOTE**

This publication includes, **DANGER**, **WARNING**, **CAUTION**, and **NOTE** information where appropriate to point out safety related or other important information.

DANGER	Hazards which could result in severe personal injury or death
WARNING	Hazards which could result in personal injury
CAUTION	Hazards which could result in equipment or property damage
NOTE	Alerts user to pertinent facts and conditions

Although **DANGER** and **WARNING** hazards are related to personal injury, and **CAUTION** hazards are associated with equipment or property damage, it should be understood that operation of damaged equipment could, under certain operational conditions, result in degraded process performance leading to personal injury or death. Therefore, comply fully with all **DANGER**, **WARNING**, and **CAUTION** notices.

TRADEMARKS

Advant, AdvaCommand, AdvaInform, AdvaTalk, and AdvaBuild are registered trademarks of ABB Asea Brown Boveri Ltd., Switzerland.

NOTICE

The information in this document is subject to change without notice and should not be construed as a commitment by ABB Automation Products GmbH. ABB Automation Products GmbH assumes no responsibility for any errors that may appear in this document.

In no event shall ABB Automation Products GmbH be liable for direct, indirect, special, incidental or consequential damages of any nature or kind arising from the use of this document, nor shall ABB Automation Products GmbH be liable for incidental or consequential damages arising from use of any software or hardware described in this document.

This document and parts thereof must not be reproduced or copied without ABB Automation Products GmbH’s written permission, and the contents thereof must not be imparted to a third party nor be used for any unauthorized purpose.

The software described in this document is furnished under a license and may be used, copied, or disclosed only in accordance with the terms of such license.

Copyright © ABB Automation Products GmbH 1999

3BSE001264/E

Template: 3BSE001286/E

TABLE OF CONTENTS

Chapter 1 - Introduction

1.1 Before You Begin 1-1
1.2 Equipment Requirements 1-1
1.3 How to Use This Book 1-2
1.4 Conventions 1-2
1.5 Related Documentation 1-3
1.6 Release History 1-3
1.7 Terminology 1-3
1.8 Product Overview 1-4
1.9 User Interface 1-4

Chapter 2 - Installation

2.1 General Information 2-1

Chapter 3 - Configuration/Application Building

3.1 Considerations 3-1
  3.1.1 Summary of AdvaBuild Engineering Software 3-1
  3.1.2 The Engineering Process 3-2
  3.1.3 Advant Object Technology 3-5
  3.1.4 Features of the Builders 3-7
  3.1.5 Structure Builder in General 3-11
3.2 Capacity and Performance 3-13
3.3 Application Start-up 3-13
3.4 Tutorial 3-14
3.5 Application Procedures 3-14
  3.5.1 Design of a Working Environment 3-14
  3.5.2 Show Installed Builders 3-14
  3.5.3 Project Administration 3-15
  3.5.4 First Steps After Project Creation 3-15
  3.5.5 How to Work with Structures 3-19
  3.5.6 Object Selection Techniques 3-26
    3.5.6.1 Mouse Selection 3-26
  3.5.7 Techniques for Graphical Manipulation of Data 3-30
    3.5.7.1 Drag and Drop 3-30
  3.5.8 Special Key and Mouse Button Bindings 3-32
  3.5.9 Inserting/Deleting Advant Objects 3-33
    3.5.9.1 Copying Advant Objects in the Selected Pool 3-33
    3.5.9.2 Deleting Advant Objects in the Selected Pool 3-33

CONTENTS (continued)

3.5.9.3 Placing Advant Objects into Structures 3-33
3.5.9.4 Copying Advant Objects in/into Structures 3-36
3.5.9.5 Moving Advant Objects in Structures 3-37
3.5.9.6 Removing Advant Objects from Structures 3-38
3.5.9.7 Deleting Advant Objects 3-38
3.5.9.8 Renaming Advant Objects 3-38
3.5.9.9 Deleting Structures 3-39
3.5.9.10 Inserting Reference Designations 3-39
3.6 Configuration/Application Building Menus; Project Context 3-41
3.6.1 Introduction 3-41
3.6.2 Project Menu 3-41
3.6.2.1 Open 3-41
3.6.2.2 Close 3-44
3.6.2.3 Administration 3-44
3.6.2.4 Upgrade 3-54
3.6.2.5 Import 3-56
3.6.2.6 Export 3-56
3.6.2.7 Recent Project List 3-58
3.6.2.8 Exit 3-58
3.6.3 View Menu 3-58
3.6.3.1 Toolbar 3-58
3.6.3.2 Status Bar 3-59
3.6.4 Options Menu 3-60
3.6.4.1 Project 3-60
3.6.5 Window Menu 3-67
3.6.5.1 Structure 3-67
3.6.6 Help Menu 3-68
3.6.6.1 Contents 3-68
3.6.6.2 On Context 3-68
3.6.6.3 How to Use Help 3-68
3.6.6.4 Release Notes 3-69
3.6.6.5 About Structure Builder 3-69
3.7 Configuration/Application Building Menus; Object Context 3-69
3.7.1 Object Menu 3-69
3.7.1.1 New 3-69
3.7.1.2 Open 3-75
3.7.1.3 Rename 3-77
3.7.1.4 Remove From Structure 3-78

CONTENTS (continued)

3.7.1.5 Delete ... 3-78
3.7.1.6 Save As ... 3-78
3.7.1.7 Exit ... 3-79
3.7.2 Edit Menu ... 3-79
3.7.2.1 Cut ... 3-79
3.7.2.2 Copy ... 3-80
3.7.2.3 Paste ... 3-80
3.7.2.4 Paste Without Subtree ... 3-80
3.7.2.5 Paste Special ... 3-80
3.7.2.6 Select All ... 3-82
3.7.2.7 Copy Bitmap ... 3-82
3.7.3 View Menu ... 3-82
3.7.3.1 Expand ... 3-82
3.7.3.2 Expand Subtree ... 3-83
3.7.3.3 Compress Subtree ... 3-84
3.7.3.4 Compress All ... 3-84
3.7.3.5 Filter Objects ... 3-84
3.7.3.6 Filter Aspects ... 3-86
3.7.3.7 Sort Aspects ... 3-89
3.7.3.8 Find Object ... 3-89
3.7.3.9 Split Horizontally ... 3-90
3.7.3.10 Split Vertically ... 3-90
3.7.3.11 Hide/Show Aspect Area ... 3-91
3.7.3.12 Toolbar ... 3-91
3.7.3.13 Status Bar ... 3-91
3.7.4 Project Menu ... 3-91
3.7.4.1 Open ... 3-91
3.7.4.2 Close ... 3-91
3.7.4.3 Administration ... 3-91
3.7.4.4 Upgrade ... 3-91
3.7.4.5 Import ... 3-91
3.7.4.6 Export ... 3-91
3.7.4.7 Recent Project List ... 3-91
3.7.5 Options Menu ... 3-92
3.7.5.1 Customize Object Types ... 3-92
3.7.5.2 Project ... 3-94
3.7.6 Window Menu ... 3-95
3.7.6.1 Structure ... 3-95

CONTENTS (continued)

3.7.6.2 Close ... 3-95
3.7.6.3 Cascade ... 3-95
3.7.6.4 Tile Horizontally ... 3-95
3.7.6.5 Tile Vertically ... 3-95
3.7.6.6 Arrange Icons ... 3-95
3.7.6.7 Window | 1, 2,... (Activate Structure Windows) ... 3-95
3.7.7 Help Menu ... 3-96
3.7.7.1 Contents ... 3-96
3.7.7.2 On Context ... 3-96
3.7.7.3 How to Use Help ... 3-96
3.7.7.4 Release Notes ... 3-96
3.7.7.5 About Structure Builder ... 3-96
3.8 Configuration/Application Building Menus; Aspect Context ... 3-97
3.8.1 Aspect Menu ... 3-97
3.8.1.1 New ... 3-97
3.8.1.2 Set Attribute ... 3-97
3.8.1.3 More 3-98
3.8.1.4 Delete ... 3-101
3.8.1.5 Save As ... 3-101
3.8.1.6 Exit ... 3-101
3.8.2 Edit Menu ... 3-101
3.8.2.1 Copy ... 3-101
3.8.3 View Menu ... 3-102
3.8.3.1 Expand ... 3-102
3.8.3.2 Expand Subtree ... 3-102
3.8.3.3 Compress Subtree ... 3-102
3.8.3.4 Compress All ... 3-102
3.8.3.5 Filter Objects ... 3-102
3.8.3.6 Filter Aspects ... 3-102
3.8.3.7 Sort Aspects ... 3-102
3.8.3.8 Find Object ... 3-102
3.8.3.9 Split Horizontally ... 3-102
3.8.3.10 Split Vertically ... 3-103
3.8.3.11 Hide/Show Aspect Area ... 3-103
3.8.3.12 Toolbar ... 3-103
3.8.3.13 Status Bar ... 3-103
3.8.4 Format Menu ... 3-103
3.8.4.1 Font ... 3-103

CONTENTS (continued)

3.8.4.2 Alignment....... 3-104
3.8.4.3 Row Height....... 3-105
3.8.4.4 Column Width....... 3-106
3.8.4.5 Autofit....... 3-106
3.8.4.6 Column Order....... 3-107
3.8.4.7 Fix/Unfix Column....... 3-108
3.8.4.8 Save as Default....... 3-108
3.8.5 Project Menu....... 3-108
3.8.5.1 Open....... 3-108
3.8.5.2 Close....... 3-108
3.8.5.3 Administration....... 3-108
3.8.5.4 Upgrade....... 3-108
3.8.5.5 Import....... 3-108
3.8.5.6 Export....... 3-108
3.8.5.7 Recent Project List....... 3-108
3.8.6 Options Menu....... 3-109
3.8.6.1 Customize Object Types....... 3-109
3.8.6.2 Project....... 3-109
3.8.7 Window Menu....... 3-109
3.8.7.1 Structure....... 3-109
3.8.7.2 Close....... 3-109
3.8.7.3 Cascade....... 3-109
3.8.7.4 Tile Horizontally....... 3-109
3.8.7.5 Tile Vertically....... 3-109
3.8.7.6 Arrange Icons....... 3-109
3.8.7.7 Window | 1, 2,... (Activate Structure Windows)....... 3-109
3.8.8 Help Menu....... 3-109
3.8.8.1 Contents....... 3-109
3.8.8.2 On Context....... 3-110
3.8.8.3 How to Use Help....... 3-110
3.8.8.4 Release Notes....... 3-110
3.8.8.5 About Structure Builder....... 3-110

Chapter 4 - Runtime Operation

4.1 Operating Overview....... 4-1
4.2 Runtime Tutorial....... 4-1
4.3 Operating Instructions....... 4-1
4.4 Runtime Operation Menus....... 4-1

CONTENTS (continued)

Chapter 5 - Maintenance

5.1 Error Messages..5-1

Appendix A - Keyboard Reference

A.1 Special Keys for Aspect Area Navigation..A-1

Appendix B - Glossary of Terms

INDEX

ILLUSTRATIONS

Figure 1-1. Organization of Manual 1-2
Figure 3-1. Engineering Model for a Plant...3-2
Figure 3-2. Engineering Process and Its Phases 3-4
Figure 3-3. Mapping of a Real World Object into an Advant Object..............................3-6
Figure 3-4. Installation on One PC or in a Network...3-8
Figure 3-5. Stand-alone PC 3-9
Figure 3-6. Networked PCs 3-9
Figure 3-7. Multiple Windows in Structure Builder..3-12
Figure 3-8. Installed Builders 3-15
Figure 3-9. Open Structure Dialog 3-16
Figure 3-10. Example of a Selected Pool Window..3-17
Figure 3-11. Set Attributes of Project Global Data Aspect Dialog 3-18
Figure 3-12. Example of the Object Area of a Structure Window 3-19
Figure 3-13. Example of a Structure Window...3-21
Figure 3-14. Context Menu for Aspect Area 3-22
Figure 3-15. Example of a Data Sheet...3-23
Figure 3-16. Copy Behavior Including Whole Subtrees 3-24
Figure 3-17. Context Menu for Drag and Drop...3-25
Figure 3-18. Illustration of Paste Without Subtree Behavior - Source 3-25
Figure 3-19. Illustration of Paste Without Subtree Behavior - Destination.....................3-26
Figure 3-20. Context Menu for the Selected Advant Object 3-27
Figure 3-21. Continuous Selection of Objects...3-28
Figure 3-22. Disjoint Selection of Objects 3-29
Figure 3-23. Deselection of Single Objects...3-30
Figure 3-24. Placing an Object..3-35
Figure 3-25. Structure Aspect Datasheet...3-39
Figure 3-26. Open Project Dialog..3-41
Figure 3-27. Open Structure Dialog 3-42
Figure 3-28. Structure Window 3-43

ILLUSTRATIONS (continued)

Figure 3-29. Close Project Dialog 3-44
Figure 3-30. Administrator Logon Dialog 3-45
Figure 3-31. Logon Dialog for SQL Plus 3-45
Figure 3-32. Project Administration Dialog 3-46
Figure 3-33. Add User Dialog 3-47
Figure 3-34. Change Password Dialog 3-48
Figure 3-35. Add Projects Dialog 3-48
Figure 3-36. Edit Size Dialog 3-49
Figure 3-37. Expand Project Dialog 3-50
Figure 3-38. Register Aspect System Dialog 3-51
Figure 3-39. Edit Time Dialog 3-51
Figure 3-40. Restore Project Dialog 3-52
Figure 3-41. Hard Disk Space Used by Projects 3-53
Figure 3-42. Assign Users to Projects Dialog 3-54
Figure 3-43. Upgrade Dialog 3-55
Figure 3-44. Projects Available for Upgrade 3-55
Figure 3-45. Import Objects Dialog 3-56
Figure 3-46. Export Objects Dialog 3-57
Figure 3-47. Toolbar 3-58
Figure 3-48. Status Bar 3-59
Figure 3-49. Set Options Dialog 3-60
Figure 3-50. Options - Add Project Dialog 3-61
Figure 3-51. Options - Set Project Options Dialog 3-61
Figure 3-52. Options - Add Structure Dialog 3-62
Figure 3-53. Options - Set Structure Options Dialog 3-63
Figure 3-54. Example of Reference Designation Display 3-64
Figure 3-55. Options - Add Display Items Dialog 3-65
Figure 3-56. Options - Set Display Item Options Dialog 3-65
Figure 3-57. Open Structure Dialog 3-67
Figure 3-58. Add Project Structure Dialog 3-68
Figure 3-59. New Object Dialog 3-69
Figure 3-60. Object Window 3-75
Figure 3-61. New Aspect Dialog 3-76
Figure 3-62. Edit Aspect Registry Dialog 3-77
Figure 3-63. Rename Objects Dialog 3-77
Figure 3-64. Save List of Objects Dialog 3-79
Figure 3-65. Paste Special Dialog 3-81
Figure 3-66. Compressed Subtree 3-83
Figure 3-67. Partly Expanded Subtree 3-83
Figure 3-68. Completely Expanded Subtree 3-83

ILLUSTRATIONS (continued)

Figure 3-69. Compressed Structure 3-84
Figure 3-70. Filter Objects Dialog 3-85
Figure 3-71. Filter Aspect Types Dialog 3-86
Figure 3-72. Filter Aspects - Set Options Dialog 3-87
Figure 3-73. Filter Example: Unfiltered Aspect Area 3-88
Figure 3-74. Filter Example: Filtered Aspect Area 3-88
Figure 3-75. Sort Aspects Dialog 3-89
Figure 3-76. Find Object Dialog 3-90
Figure 3-77. Vertically Split Structure Window 3-90
Figure 3-78. Customize Object Types Dialog 3-92
Figure 3-79. New Object Type Dialog 3-93
Figure 3-80. Edit Object Type Dialog 3-94
Figure 3-81. New Aspect Dialog 3-97
Figure 3-82. Set Attributes of Aspects 3-97
Figure 3-83. Aspect More Dialog 3-98
Figure 3-84. Set Attributes of Basic Property Aspect Dialog 3-98
Figure 3-85. Aspect More Dialog for a Structure Aspect 3-99
Figure 3-86. Set Attributes of Structure Aspect Dialog 3-99
Figure 3-87. Example of Reference Designations with < Control 3-100
Figure 3-88. Aspect More Dialog for Node Control Software Dialog 3-100
Figure 3-89. Save List of Aspects Dialog 3-101
Figure 3-90. Format - Font Dialog 3-103
Figure 3-91. Format - Alignment Dialog 3-104
Figure 3-92. Format - Row Height Dialog 3-105
Figure 3-93. Format - Column Width Dialog 3-106
Figure 3-94. Format - Set Column Order Dialog 3-107
Figure A-1. Selection Cursor in Aspect Area A-1
Figure A-2. Edit Cursor in Aspect Area A-1

TABLES

Table 1-1. Related Documentation 1-3
Table 1-2. Release History 1-3
Table 3-1. Drag and Drop Functions 3-31
Table 3-2. Mouse Button Assignment 3-32
Table 3-3. Modifier Keys 3-32
Table 3-4. Drag and Drop Defaults 3-32
Table 3-5. Allowed Characters - DB Element Names 3-72
Table 3-6. Allowed Characters - PC Element Names 3-73
Table A-1. Special Keys for Aspect Area Navigation A-2

Chapter 1 Introduction

1.1 Before You Begin

This manual describes the Structure Builder. Structure Builder is the basic tool for all the other Builders of AdvaBuild Engineering Software. With this Builder you can create Advant objects, design structures, and add aspects to Advant objects. Afterwards other Builders can work on these aspects.

This book is not intended to be the sole source of instruction for engineering tools. Those people involved in system engineering should attend the applicable system engineering courses offered by ABB.

The reader of this book should have good knowledge about engineering in general and the work flow used in his project.

1.2 Equipment Requirements

For a description of the system requirements consult the Release Notes of Advant Engineering Workplace and the Release Notes of the individual Builders.

1.3 How to Use This Book

This book is organized into chapters and sections as shown in Figure 1-1.

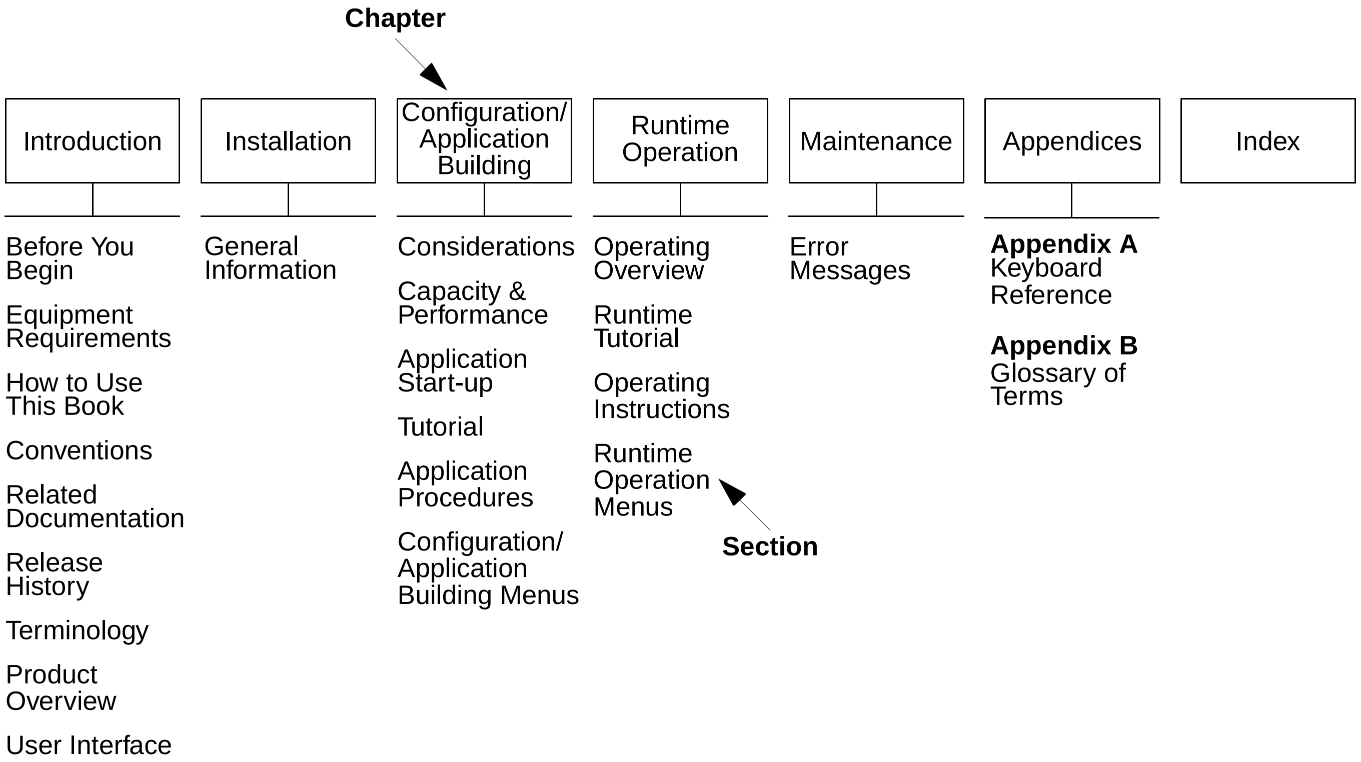


Figure 1-1. Organization of Manual

The main part of this users guide is placed in Chapter 3, Configuration/Application Building. Here you will find general considerations, application procedures, and as a reference part, a description of all menu commands.

1.4 Conventions

The names of referenced manuals are written in italics.

Keyboard interaction

When you read	You shall
File | Copy	Open the **File** menu, choose the item **Copy**, and click it with left mouse button
Ctrl+M	Press the **Ctrl** key and the key labelled **M** simultaneously

1.5 Related Documentation

Table 1-1 shows related documentation.

Table 1-1. Related Documentation

Category	Title	Description
Station	Advant Station 100 Series Engineering Station User's Guide	Describes the hardware and setup of Advant Station 100 Series Engineering Station including the Advant Station 100 Series Engineering Board
Software	AMPL Control Configuration Functions User's Guide	Describes the handling of control configuration related aspects of Advant objects into the Structure Builder
Options	Parameter Builder User's Guide	Describes how to handle parameters for process objects and for OCS objects
	Document Builder User's Guide	Describes the handling of templates and of various types of document aspects belonging to Advant objects
Other	Bulk Data Handling and Reuse Reference Manual	Describes the working with Structure Builder's Import/Export functions
	Engineering Methods User's Guide	Describes the principles of engineering based on the Advant object concept

1.6 Release History

Table 1-2 lists the major milestones in the development of Structure Builder User's Guide

Table 1-2. Release History

Version	Description
3BSE013932R0001	Describes the Structure Builder 3.0/0
3BSE013932R0101	Describes the Structure Builder 3.1/0
3BSE013932R201	Describes the Structure Builder 3.2

1.7 Terminology

See Appendix B, Glossary of Terms..

1.8 Product Overview

Structure Builder is the basic tool for creation and administration of Advant objects. Further on it is a browser for structures, to show the hierarchical relations between Advant objects. From Structure Builder all other Builders will be started. Therefore it is a general prerequisite for all other Builders.

1.9 User Interface

The functions of Structure Builder are implemented by Windows programs with the typical graphic user interface and look-and-feel of Windows programs.

The dialogs that will appear on the screen, normally have Help buttons. Clicking this button will open the Structure Builder's on-line help, where you will get context-sensitively help to the actual topic.

Chapter 2 Installation

2.1 General Information

See *Advant Engineering Workplace Release Notes* and *Structure Builder Release Notes*.

Chapter 3 Configuration/Application Building

3.1 Considerations

3.1.1 Summary of AdvaBuild Engineering Software

This section covers the engineering software for the **Advant Open Control System with Master Software.** The engineering software consists of a set of cooperating tools named **Builders.** The tool set is referred to as the **AdvaBuild Engineering Software.**

All tools of the AdvaBuild Engineering Software base on the **Advant Object Technology**. This underlying concept utilizes a rich base of real-world experiences to make the complex engineering process during its whole life cycle simple, accessible, and intuitive. AdvaBuild Engineering Software as the incorporation of the Advant object concept provides the engineers with extensive capabilities and cutting-edge technologies. The following sections give an overview of the Advant object technology and AdvaBuild Engineering Software.

The engineering software supports:

- Many **phases** and **tasks** of the **engineering process** from plant design to maintenance
- Different **project type**
- Various **working methods**
- Reuse of existing solutions and import of engineering data for **efficient** working.

The engineering software is based on an **object oriented concept**, the **Advant object technology**. That offers a methodology to model a plant for engineering purposes (see Figure 3-1), and to structure and handle the complete engineering data using Advant objects. All relevant data for one **object** like a motor with all its aspects such as specifications, control logic and CAD-drawings are kept together and are easily accessible.

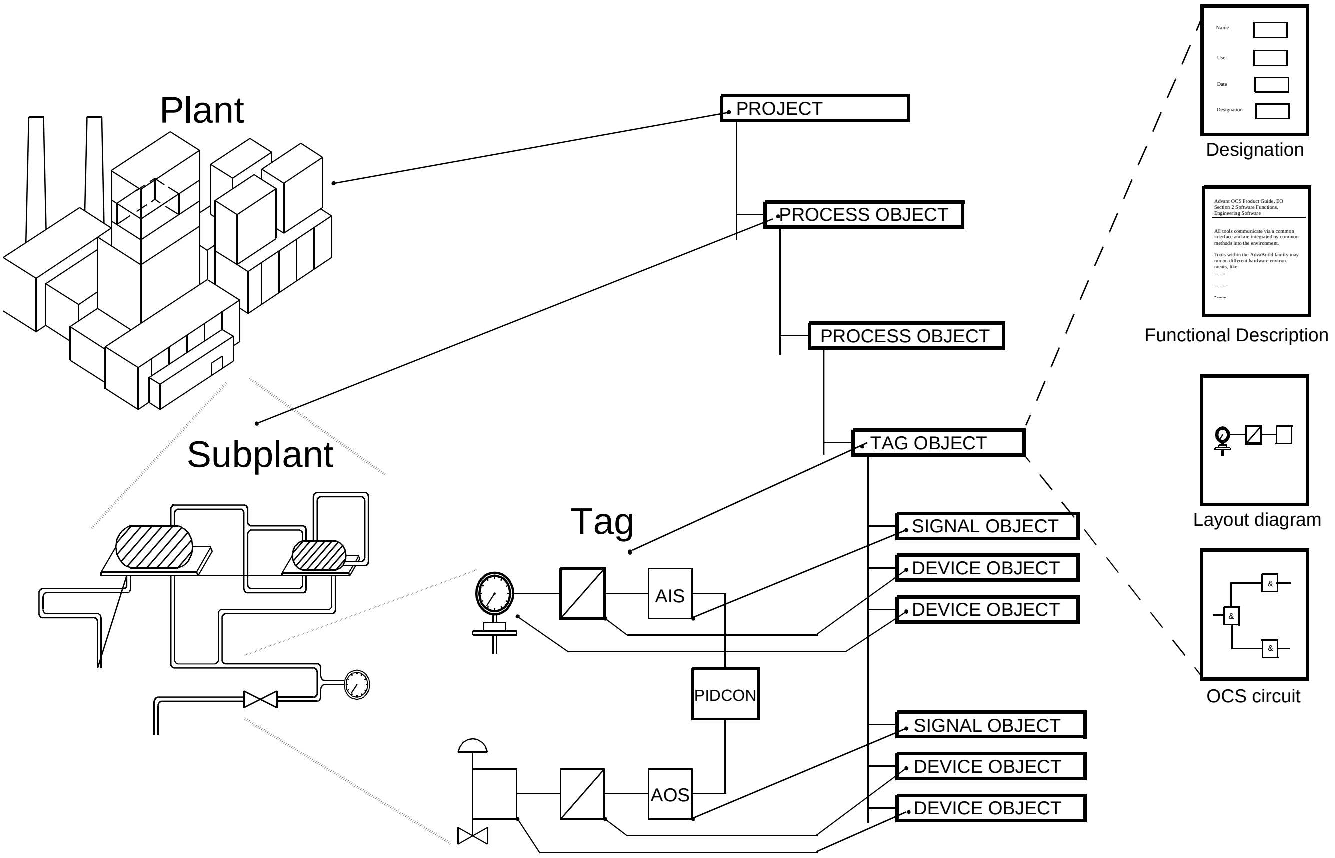


Figure 3-1. Engineering Model for a Plant

The engineering software supports various working methods with a uniform and scalable set of tools. These tools cooperate with each other by common mechanisms. They run on scalable hardware environments, like

- Stand-alone personal computers (PCs) not connected to a network
- Networked PCs with a data server.

3.1.2 The Engineering Process

In order to produce high quality results, the engineering process shall be treated in a well-structured, reproducible, and documented manner. These issues are necessary to work in accordance to ISO 9000.

The engineering process can be divided into different engineering phases, where typical engineering work is executed. Engineering work shall not be restricted to one given work flow model. You can enter data whenever they are available and refine them in later phases, when more details are specified.

Engineering Project Phases

The engineering process for a project can be divided into several engineering phases (see Figure 3-2):

- **Bid and proposal**
  In this phase technical and commercial frame conditions for the project are defined.
- **Plant design**
  In this phase the basic definitions like structures are defined and agreements are made, which standards shall be followed. Here the basis for efficient work of high quality in later project phases is set.
- **Software production and test**
  The bulk work for the OCS-part of the projects is done in this phase. If the plant design is made in a structured way and standards are available, engineering work can be done efficiently. Also the quality is improved if proven solutions are reused.
- **Installation and commissioning**
  This phase is made at site and may require a frequent change/update cycle. Up to date information is very important.
- **Maintenance**
  As data are available in a structured way from the previous project phases, maintenance personnel has fast and easy access to up to date information. This is the basis for quick analysis and changes.

In parallel to the above mentioned phases the following activities exist in a project:

- **Project management**
  to organize and control the progress of the project
- **Supply chain coordination**
  to organize and control all necessary deliveries for the project.

Engineering tools focus on an efficient support for plant design, software production and test, installation and commissioning, and maintenance. Nevertheless, information can be accessed from the bid and proposal phase (like specifications) and from the supply chain coordination (like delivery data) for reuse in the engineering process if they are available in electronically readable format.

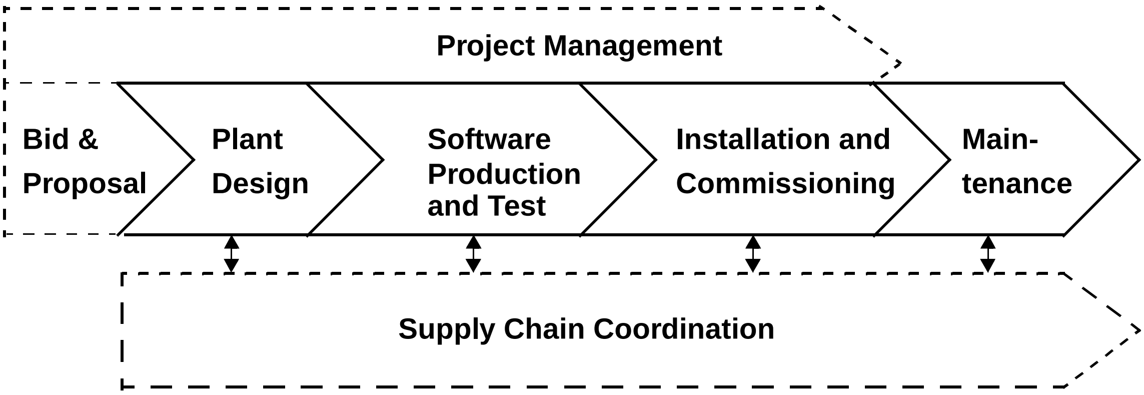

Project Management
Bid & Proposal
Plant Design
Software Production and Test
Installation and Commissioning
Main-tenance
Supply Chain Coordination

Figure 3-2. Engineering Process and Its Phases

Project Types

Depending on the scope of supply we can distinguish between the following project types:

- **Advant OCS engineering project**
  This project scope is focused to supply the controller and MMI configuration of Advant OCS.
- **Plant engineering project**
  Plant engineering projects cover – in addition to Advant OCS engineering – further engineering activities like electrical CAD.
- **Civil engineering project**
  The scope extends to building, infrastructure and mechanical engineering.

While the first two project types are efficiently supported by the AdvaBuild Engineering Software, civil engineering is not focused.

Depending on the project type, the project size and the number of project members, an adequate working environment can be configured out of the AdvaBuild Engineering Software.

Working Methods

In order to optimize the engineering process, it is recommended to standardize the engineering work flow for a certain project type. The tool set is flexibly adaptable to different working methods.

If specification data are already available - which is typical in an early stage of the engineering process - it is profitable to use a bulk data oriented work flow, where these data are efficiently transformed into the engineering environment.

In later stages of software production and during commissioning and maintenance a more interactive working method is used, where data are refined and incremental changes are done with the Builders).

Depending on organizational structures of your engineering projects the following methods are possible:

- **Task oriented work flow**
  Dedicated tasks, like electrical CAD, are executed by specialists.
- **Function oriented work flow**
  All tasks for a dedicated process section are executed by one engineer.

The first method needs less overall knowledge for each individual person, while the second gives a high potential for powerful reusable solutions.

Independent of the selected working method, the AdvaBuild Engineering Software enables you to distribute work in a scalable environment. During in-house engineering the complete set of tools may be available, whereas a stand-alone personal computer may be used during commissioning with a selected subset of Builders.

Reuse of standard Engineering Solutions

Recurring engineering tasks can be solved once and then put into a library of well tested standard engineering solutions. These standard engineering solutions may contain all engineering aspects of the object like control logic, CAD drawings, and functional descriptions. They can be reused and parametrized for the dedicated project whenever a similar task occurs again.

Using well tested and standardized solutions increases the quality of applications and the project efficiency. Further on it reduces maintenance efforts.

Standard engineering solutions can be developed the same way as ordinary project data, using AdvaBuild Engineering Software.

3.1.3 Advant Object Technology

AdvaBuild Engineering Software is based on the **Advant object technology**. This technology deals with modeling and structuring of data.

Information handled during the engineering process will be assigned to Advant objects. The Advant object technology supports modeling of a real world for engineering purposes. It keeps all relevant data of an object together.

With Advant objects you can easily structure information treated in the engineering process phases plant design, software production and test, installation and commissioning, and maintenance.

The Advant object technology defines a methodology how to handle the described items in a comfortable and consistent way by introducing:

- Advant objects
- Aspects
- Views.

The Advant object technology allows the concurrent access to the information by several engineers.

Figure 3-3 shows a typical example of an Advant object used in electrical and control engineering.

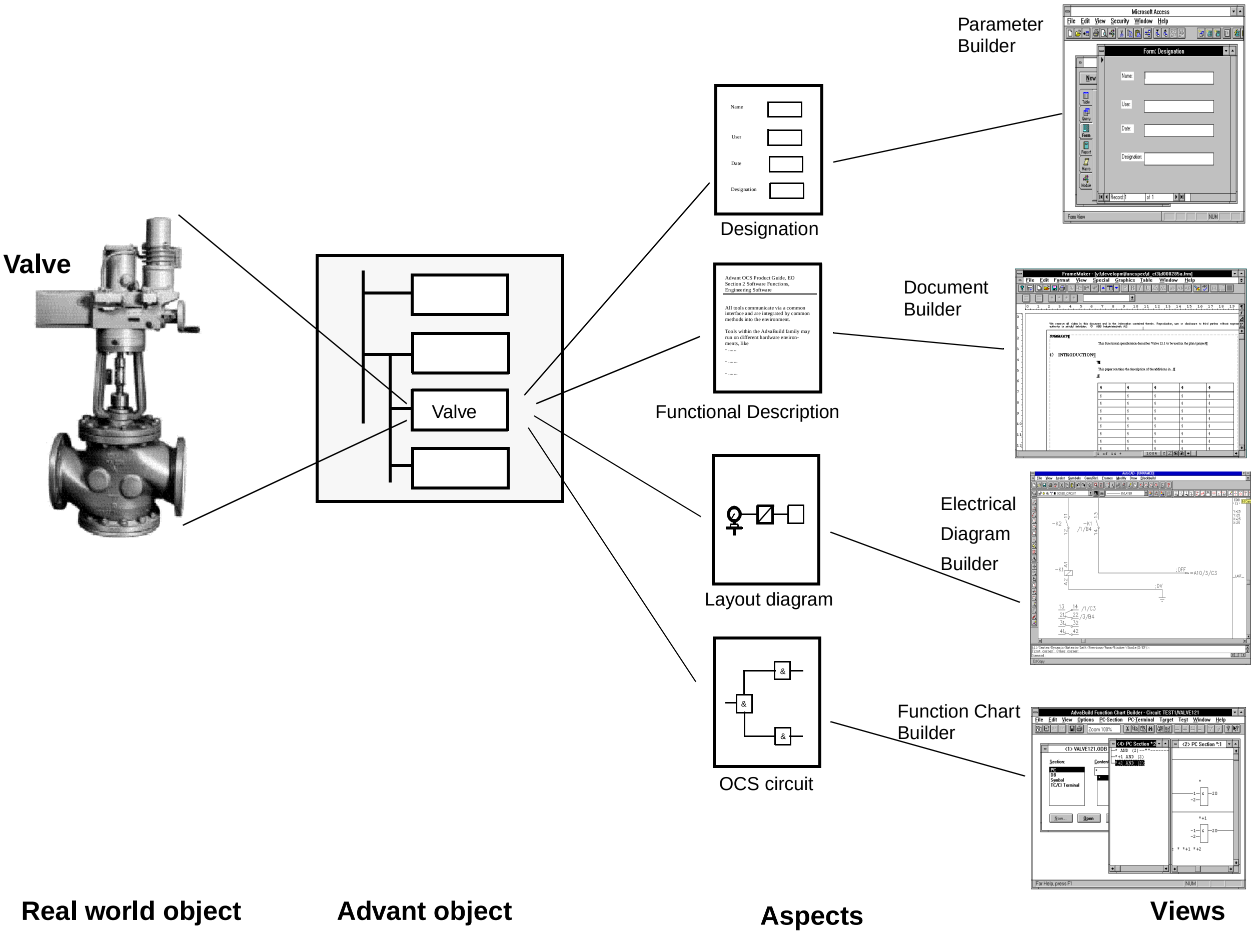


Figure 3-3. Mapping of a Real World Object into an Advant Object

Advant Objects

During the engineering process you may deal with different items:

- Main plant equipment like a boiler or a casting machine
- Components and devices like motors, cabinets and I/O-boards
- Information entities such as signals
- Location entities like areas, buildings etc.

To come to a unique treatment of these items, each of them is referred to as an **Advant object**.

Aspects

There are often several **aspects** of one Advant object to consider in the engineering work. An aspect can be defined in a way you want to handle the Advant object. For example, if the location of a motor within the plant's landscape is of interest, create a location aspect of the motor. In another context you may find it interesting to inspect the control logic aspect of that motor. For wiring purposes yet another aspect may be needed. In this way you can create several aspects of one Advant object.

Each aspect is typically handled by one Builder. An example is the Function Chart Builder, which handles control aspects.

Views

A **view** is a specific presentation of engineering data belonging to one or more aspects of an Advant object. An aspect may have several views. The presentation in a view gives the possibility to inspect and modify engineering data.

The data may be presented for example as a list, a table, a diagram, or a drawing.

Examples of views for a control logic aspect are:

- Function chart
- Textual representation such as AMPL source code.

Creation of Structures for Advant Objects

Advant objects can be related to each other hierarchically. This structure corresponds to the relation of real world objects of a plant.

You can organize the Advant objects in different structures, such as functional or location structure. Advant objects are automatically put into the pool structure. The pool structure holds all Advant objects in a non-hierarchical list.

A structured approach supports designation handling, for example according to IEC 750:1983 and IEC 1082, and efficient usage of designations for example in diagrams, where designations may be concatenated according to the structures.

3.1.4 Features of the Builders

AdvaBuild Engineering Software consists of a set of cooperating tools, called Builders, supporting the tasks to be performed in Advant OCS and plant engineering projects. The project phases plant design, software production and test, installation and commissioning and maintenance are supported.

Client/Server Architecture

Applications may consist of a client and a server part. This split in the design of the software is meaningful when two criteria have to be fulfilled:

- Data consistency shall be guaranteed for several applications and team members
- Computer load shall be balanced between several clients and the server.

AdvaBuild Engineering Software consists of several Builders. When you plan your environment, you should decide whether you want to install AdvaBuild Engineering Software including the Advant Engineering Server on one PC or on several PCs connected via a TCP/IP network (see Figure 3-4).

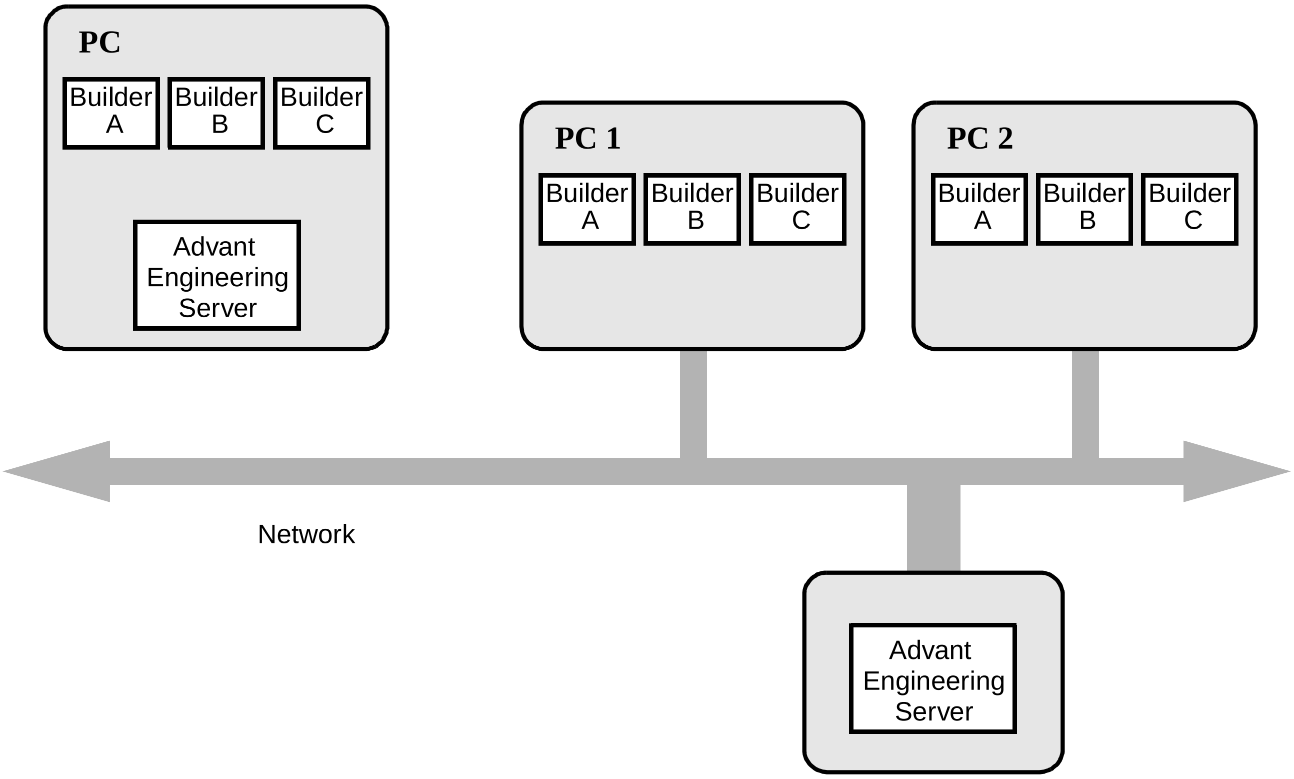


Figure 3-4. Installation on One PC or in a Network

As AdvaBuild Engineering Software consists of several Builders, there are several Builders installed on one PC. These Builders can cooperate with others via the so-called Aspect Request Broker. With the help of this cooperation all aspects of Advant objects can be kept consistently together. When the Builders cooperate in this manner, we talk about the **cooperating mode**. The data necessary to achieve the cooperation between Builders are stored in the so-called **Aspect Registry**.

Some Builders can also run in **independent mode** without cooperation. In this mode Advant objects are not available, only independent aspects.

You can combine software and hardware according to your specific needs. Several configurations are possible:

- The **stand-alone** PC (see Figure 3-5)

  Everything is stored on the local hard disk. A typical example is an Advant Station 100 Series Engineering Station used in a commissioning situation. The tools can be run either in the **independent** mode or in the **cooperating** mode (see Figure 3-4).

- **Networked** PCs (see Figure 3-5)

  Data can be stored on a data server for multi-user access. An example for this configuration is in-house engineering.The tools can be run either in the **independent** mode or in the **cooperating** mode (see Figure 3-4).

The following configurations are supported by the AdvaBuild Engineering Software:

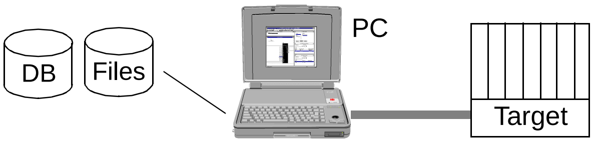


Figure 3-5. Stand-alone PC

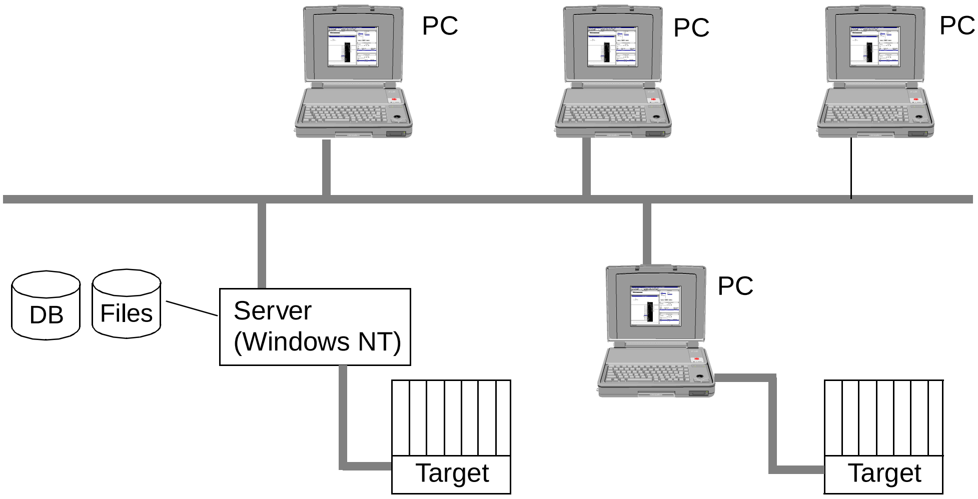


Figure 3-6. Networked PCs

The variety of configurations offers the optimum flexibility and scalability for the creation of an engineering environment according to your needs. As different configurations may coexist, it is easy to extend and reduce the number of users within a project organization. The use of licences can be optimized if a certain workplace does not need all the functions available.

It is easy to disconnect a PC from a client/server configuration to be able to work with a stand-alone PC and vice versa.

Multi-user Environment

The Builders support working in a multi-user environment. The project members have access to the data of the project depending on their access rights. When a member is working with an aspect of an Advant object, that aspect is locked, so that other project members cannot modify it to assure data consistency.

Network Functions

Beside the general client/server architecture the following network functions are available:

- Access to controllers via the plant network (see Figure 3-6). The engineer can access controllers in the test field or at site from his office.
- Storage of data on file servers in heterogeneous networks consisting of personal computers and workstations
- Printing of documents of printers in heterogeneous networks.

Scalability

AdvaBuild Engineering Software is scalable in many respects. Therefore, the environment can be configured according to the project’s demands. The optimum project environment can be determined by the project type, number of project members, and the set of required Builders.

User Interface

The user interface of the Builders is easy to learn and use, as it is designed according to standard style guides. Depending on the underlying operating system, the tools appear in the well known styles of Microsoft Windows NT.

If you are familiar with Microsoft Windows you will feel comfortable in this environment. Efficient methods like cut, copy and paste or drag and drop, toolbar buttons, and accelerator keys are available. The on-line help will immediately answer your questions while working with the tool.

Project Data Administration

AdvaBuild Engineering Software supplies functions for project data administration. It allows to register different users and allocate access rights and passwords.

Backup and restore of project data is supported.

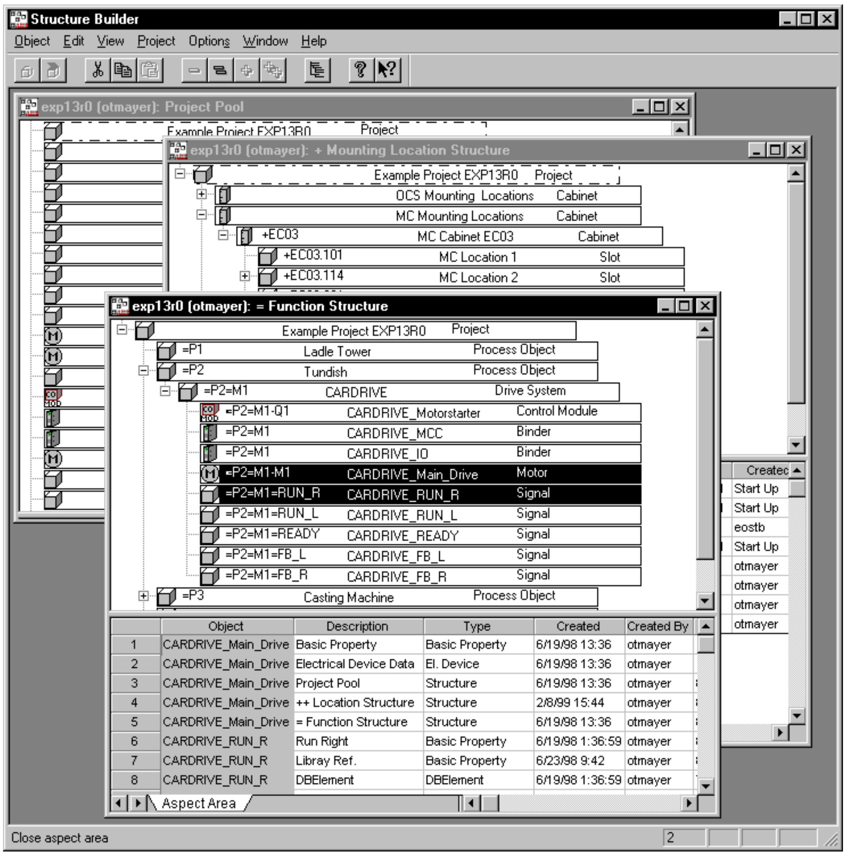
3.1.5 Structure Builder in General

Structure Builder is the basic tool to handle the Advant objects and to visualize the structure of a plant. The plant is represented as a set of Advant objects. Structure Builder enables you to navigate between Advant objects in a convenient way and to perform activities on a selected Advant object, such as starting a certain tool, copying or moving an Advant object, a subtree or a whole project.

Several functions are provided by Structure Builder:

- Creating, moving, and deleting of Advant objects (it is also possible to copy between projects and to handle absolute and relative reference designations)
- Structuring of Advant objects in a hierarchy according to the needs of the plant and process structure
- Powerful mechanisms to import engineering data in cooperation with the Parameter Builder
- Navigation between Advant objects
- Opening views on aspects.

In Structure Builder several windows can be open simultaneously. You can open for example the location structure of the same project more than once. Data consistency is achieved independent on the window you are working with. Further on you can operate in the functional structure of the same project and in the location structure of another project. Figure 3-7 shows an example of multiple windows in Structure Builder.


Structure Builder
Object Edit View Project Options Window Help
exp13r0 (otmayer): Project Pool
exp13r0 (otmayer): + Mounting Location Structure
exp13r0 (otmayer): = Function Structure
Aspect Area
Close aspect area
2

Example Project EXP13R0 Project
OCS Mounting Locations Cabinet
MC Mounting Locations Cabinet
+EC03 MC Cabinet EC03 Cabinet
+EC03.101 MC Location 1 Slot
+EC03.114 MC Location 2 Slot

Example Project EXP13R0 Project
=P1 Ladle Tower Process Object
=P2 Tundish Process Object
=P2=M1 CARDRIVE Drive System
=P2=M1-Q1 CARDRIVE_Motorstarter Control Module
=P2=M1 CARDRIVE_MCC Binder
=P2=M1 CARDRIVE_IO Binder
=P2=M1-M1 CARDRIVE_Main_Drive Motor
=P2=M1=RUN_R CARDRIVE_RUN_R Signal
=P2=M1=RUN_L CARDRIVE_RUN_L Signal
=P2=M1=READY CARDRIVE_READY Signal
=P2=M1=FB_L CARDRIVE_FB_L Signal
=P2=M1=FB_R CARDRIVE_FB_R Signal
=P3 Casting Machine Process Object

	Object	Description	Type	Created	Created By
1	CARDRIVE_Main_Drive	Basic Property	Basic Property	6/19/98 13:36	otmayer
2	CARDRIVE_Main_Drive	Electrical Device Data	El. Device	6/19/98 13:36	otmayer
3	CARDRIVE_Main_Drive	Project Pool	Structure	6/19/98 13:36	otmayer
4	CARDRIVE_Main_Drive	++ Location Structure	Structure	2/8/99 15:44	otmayer
5	CARDRIVE_Main_Drive	= Function Structure	Structure	6/19/98 13:36	otmayer
6	CARDRIVE_RUN_R	Run Right	Basic Property	6/19/98 1:36:59	otmayer
7	CARDRIVE_RUN_R	Libray Ref.	Basic Property	6/23/98 9:42	otmayer
8	CARDRIVE_RUN_R	DBElement	DBElement	6/19/98 1:36:59	otmayer

Figure 3-7. Multiple Windows in Structure Builder

Administration

The administration features of Structure Builder are necessary to start-up working in the cooperating mode. The administration tool can

- Create projects
- Give users access to certain project data
- Modify passwords
- Register other Builders and their features
- Backup and restore project data
- Delete projects.

Aspect Request Broker

During operation the **Aspect Request Broker** is not visible. It is only interesting for you to know that it is a necessary prerequisite for cooperating Builders.

3.2 Capacity and Performance

3.3 Application Start-up

You can start Structure Builder with command line parameters, which you might use for a shortcut of Windows NT. Some of these parameters are optional. With the command line parameters you can achieve the following actions:

- Open a certain project
- Navigate to a certain Advant object in the pool
- Navigate to a certain Advant object in a certain structure window.

Syntax:

```
Path [ConnectString ProjectName User Passw [ObjectName NameCategory [StructureName]]]
```

Description:

Path:	Path to eob.exe, the Structure Builders's executable

Command line parameters for eob.exe:

ConnectString:	The name of the database of Structure Builder; see **Project | Open** dialog in Figure 3-26
ProjectName:	Name of the project you would like to open at start of Structure Builder
User:	Username
Passw:	Password
ObjectName:	Name of the Advant object Structure Builder shall navigate to; as an Advant Object may have several names, each belonging to a certain name category, the name category has to be specified, too.
NameCategory:	One of the available name categories; see Figure 3-60
StructureName:	Name of the structure window that shall be opened; see Figure 3-57

Parameters which contain blanks have to be enclosed by quotes ("...").

Example for a shortcut:

```
H:\STB\30r0\bin\eob.exe tns:git13_eo Pumpstat rufroehl abc "AI17" "Customer ID"
  "++ Location Structure"
```

See *Structure Builder Release Notes* for more information.

3.4 Tutorial

See *Engineering Methods User's Guide* for more information.

3.5 Application Procedures

3.5.1 Design of a Working Environment

AdvaBuild Engineering Software consists of several products, basic units and options, which may again contain several Builders like **Structure Builder**. Depending on your special needs, you may select some or all products. Some of them are mandatory, while others are optional. When you want to use the Advant object technology, it is necessary, that you have Structure Builder and Advant Engineering Server installed on your system.

Cooperating Builders must reside on the same PC. This is necessary, because cooperation works via the **Aspect Request Broker**, which works locally on one PC. As the Aspect Request Broker is part of the Structure Builder, the Structure Builder is mandatory on each client, because it will start all other Builders via the broker.

On the server PC the server part of **Advant Engineering Server** and of Structure Builder are installed. Beside the Oracle® database it hosts the hard disk area for project data and for the network installation of all Builders. To be able to run a certain Builder from a client PC, you must start the **Setup** program from the **Netsetup** directory of that Builder. The **Setup** program will copy data you need to start the Builder to the hard disk of the client PC.

To perform this task it is necessary that the client PC and the server PC are connected to a network.

It is possible to install the client and server part of the Builders on one PC. For more information about installation, read the Release Notes of **Advant Engineering Server**.

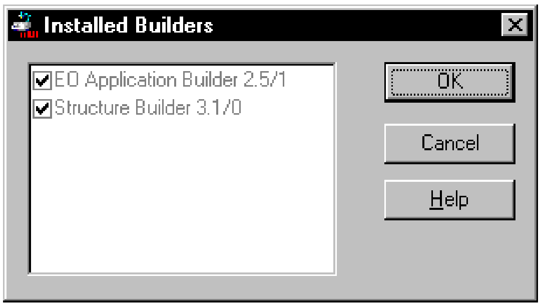
You can read about the network environment you need and about software installation in the Release Notes of each Builder.

3.5.2 Show Installed Builders

You can inspect the currently installed builders with the following command:

Start | Advant | Engineering | Utilities | Installed Builders

This will open the window shown in Figure 3-8, which lists the installed builders and their version.



☑ EO Application Builder 2.5/1
☑ Structure Builder 3.1/0

Figure 3-8. Installed Builders

3.5.3 Project Administration

The next step after the setup of your environment and software installation is to create a project. A project is on one hand a container for engineering data and on the other hand an entity which holds access rights of users working with the project data. It is the task of the administrator to create a project.

Project administration is a task with high security demands. Therefore, if you want to administer projects, you have to log into the administration utility with a special administrator password. As administrator you can create and delete whole projects. Further on you can backup and restore projects and adjust the space used for a certain project in the projects's database. And you can modify the passwords of users.

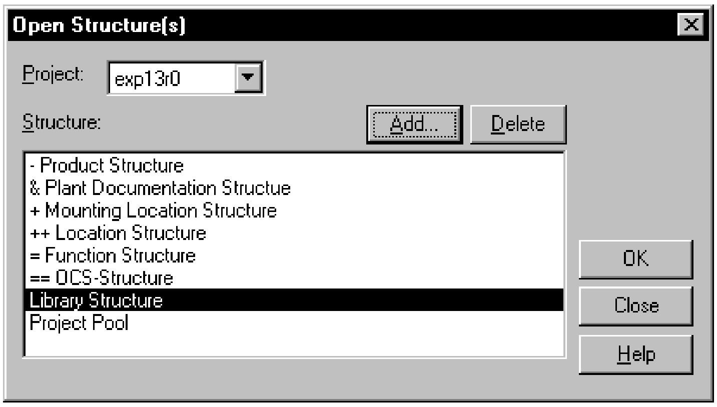
An user that shall become a member of a certain project, must be assigned to the Windows NT group **AdvaBuild_engineers**. This can be performed with the Windows NT **User Manager**. Members of **AdvaBuild_engineers** can be assigned by the administrator to a certain project. Further on, the administrator can specify whether a project member has read or write access to the project data.

You can start the administration utility with the **Project | Administration** menu command (see Section 3.6.2.3, Administration).

3.5.4 First Steps After Project Creation

When you have created a new project with the **Project | Administration** menu command, you can close the **Administration** dialog and open the project with the **Project | Open** menu command (see Section 3.6.2.1, Open). When you are logged into the project, the **Open Structure** dialog will be displayed (see Figure 3-9). It lists some predefined structures, which are empty at project creation time.

At this time a first Advant object was created. You can see it, if you open the **Pool** window in the **Open Structure** dialog. The pool is a list of all Advant objects. Further on you can create a **Selected Pool** window with the **View | Filter Objects** menu command (see Section 3.7.3.5, Filter Objects). The **Selected Pool** displays a restricted (filtered) subset of Advant objects. If you use the default SQL file, you will see all Advant objects in your project. But at this time only one Advant object is available.



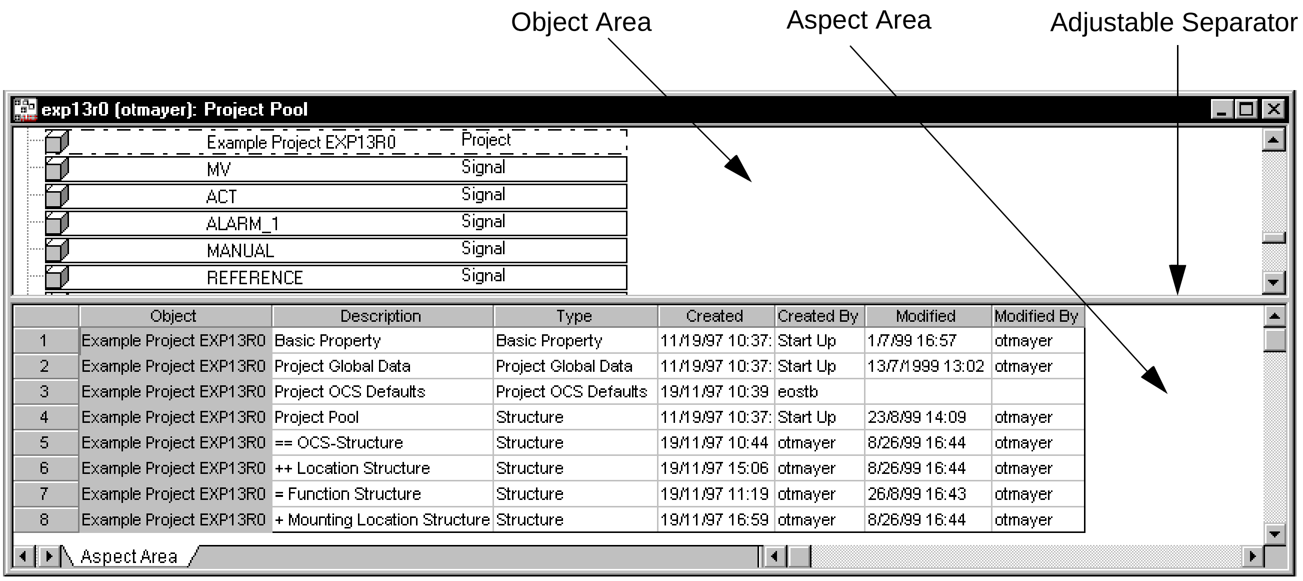
- Product Structure
& Plant Documentation Structue
+ Mounting Location Structure
++ Location Structure
= Function Structure
== OCS-Structure
Library Structure
Project Pool

Figure 3-9. Open Structure Dialog

This object is the project object. It works as the root object for all other objects of the project. The object has three automatically created aspects with the following aspect types: Project global data, project pool, and structure.

Figure 3-10 shows an example of a **Selected Pool** window for a project named exp13r0 (Example Project 13r0). In the upper part of the window you see the **Object Area**. Here the Advant objects are shown. The lower part of the window is the so-called **Aspect Area**, which shows the aspects of the selected Advant objects with their attributes. The scope of the aspect area is restricted to attributes stored in the aspect registry (see Section 3.1.4, Features of the Builders. Structure Builder specific data will be listed in so-called **Data Sheets**, described in Section 3.5.5, How to Work with Structures.

In the aspect area the three aspects, that are automatically created, are listed. Only a subset of the available attributes is shown.



exp13r0 (otmayer): Project Pool

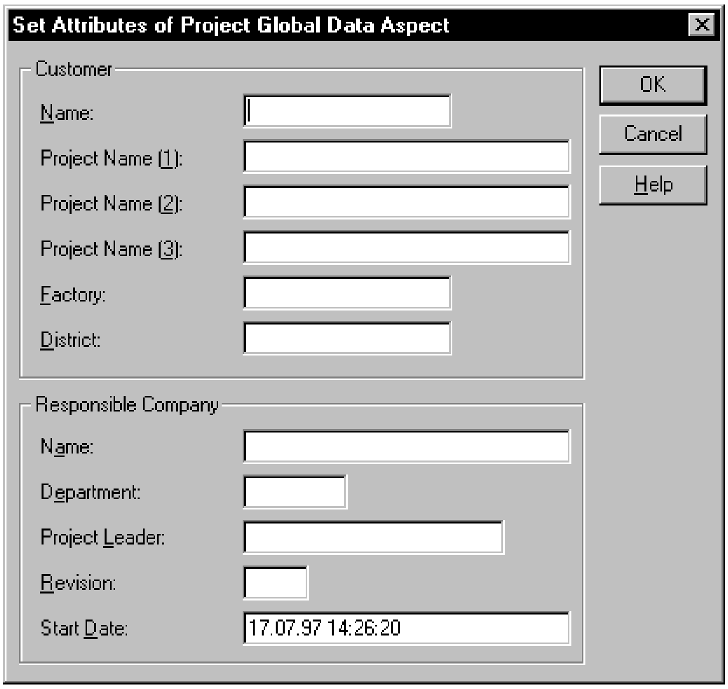
Example Project EXP13R0	Project
MV	Signal
ACT	Signal
ALARM_1	Signal
MANUAL	Signal
REFERENCE	Signal

	Object	Description	Type	Created	Created By	Modified	Modified By
1	Example Project EXP13R0	Basic Property	Basic Property	11/19/97 10:37:	Start Up	1/7/99 16:57	otmayer
2	Example Project EXP13R0	Project Global Data	Project Global Data	11/19/97 10:37:	Start Up	13/7/1999 13:02	otmayer
3	Example Project EXP13R0	Project OCS Defaults	Project OCS Defaults	19/11/97 10:39	eostb		
4	Example Project EXP13R0	Project Pool	Structure	11/19/97 10:37:	Start Up	23/8/99 14:09	otmayer
5	Example Project EXP13R0	== OCS-Structure	Structure	19/11/97 10:44	otmayer	8/26/99 16:44	otmayer
6	Example Project EXP13R0	++ Location Structure	Structure	19/11/97 15:06	otmayer	8/26/99 16:44	otmayer
7	Example Project EXP13R0	= Function Structure	Structure	19/11/97 11:19	otmayer	26/8/99 16:43	otmayer
8	Example Project EXP13R0	+ Mounting Location Structure	Structure	19/11/97 16:59	otmayer	8/26/99 16:44	otmayer

Figure 3-10. Example of a Selected Pool Window

The second aspect listed is of type **Project Global Data**. Only one Advant object can have a **Project Global Data** aspect within a project. Typically this is the project object. The aspect can be used to hold some general information about the project. To enter data you must open the **Set Attributes of Project Global Data** dialog. You can do this in two different ways:

1. Via the **Aspect Area**:
   a. Select the **Project Global Data** aspect in the aspect area by clicking a cell of the row.
   b. Click the right mouse button and the **Open** button that will now appear; now the dialog will be displayed (see Figure 3-11).
2. Via the **Object Window**:
   a. Double-click in the object area the Advant object that represents the project (in Figure 3-10 this object is named Example Project EXP13R0); now the **Object Window** will be displayed.
   b. Select the **Project Global Data** aspect and click the **More | Open** button; now the dialog will be displayed (see Figure 3-11).



Start Date: 17.07.97 14:26:20

Figure 3-11. Set Attributes of Project Global Data Aspect Dialog

You can use the different fields to enter general information about the project. The entered data are stored in this aspect only and are not used in other circumstances.

In the same way you can set attributes of the other aspects.

Now you have adapted the project object according to your needs. The next step is to create new Advant objects. You can perform this with the aid of the **Object | New** menu command (see Section 3.7.1.1, New). This command is available only, if at least pool or a structure window is open. The new object will be inserted into the currently active window.

As a next step you may add aspects you need to the Advant objects. To perform this, double-click the object to open the **Object Window** and click **New**. Specify the attributes of the aspect afterwards. In the **Views** area of the **Object Window** you see the available views. Select one and click **Open** to start a Builder that can work on that view.

As a project may consist of a huge number of Advant objects, it may be interesting for you to design own subsets of Advant objects, called structures. It may be appropriate for example, to have certain Advant objects placed in a location structure, while others are available only in a control function specific structure.

You can use the predefined structures and you can define your own structures. To place an Advant object into another structure, drag it from the structure where it resides and drop it into the destination structure.

In this manner you can create a hierarchy of Advant objects with several structures.

3.5.5 How to Work with Structures

Object Area

An Advant object can be placed into one or several structures. To keep track of each structure into which an Advant object is inserted, a corresponding structure aspect is added to the Advant object. This implies that you do not delete an Advant object when you remove it from a structure. In this case you delete the corresponding structure aspect, only.

While a pool represents a list of Advant objects in arbitrary order, structures offer the possibility to define parent-child relations between Advant objects. This makes it possible to navigate in an easy way top down through a structure. If you display a structure in compressed form, only the Advant objects on the highest level are visible, all children are hidden.

The children build a subtree to the parent object. It is possible to expand subtree by subtree. This mechanism is useful when you try to model real world objects. A rack for example is a container for a number of boards, and a board has several channels. Boards and channels are subtrees from the structure point of view.

How to expand and compress structures is explained with the following example (see Figure 3-12):

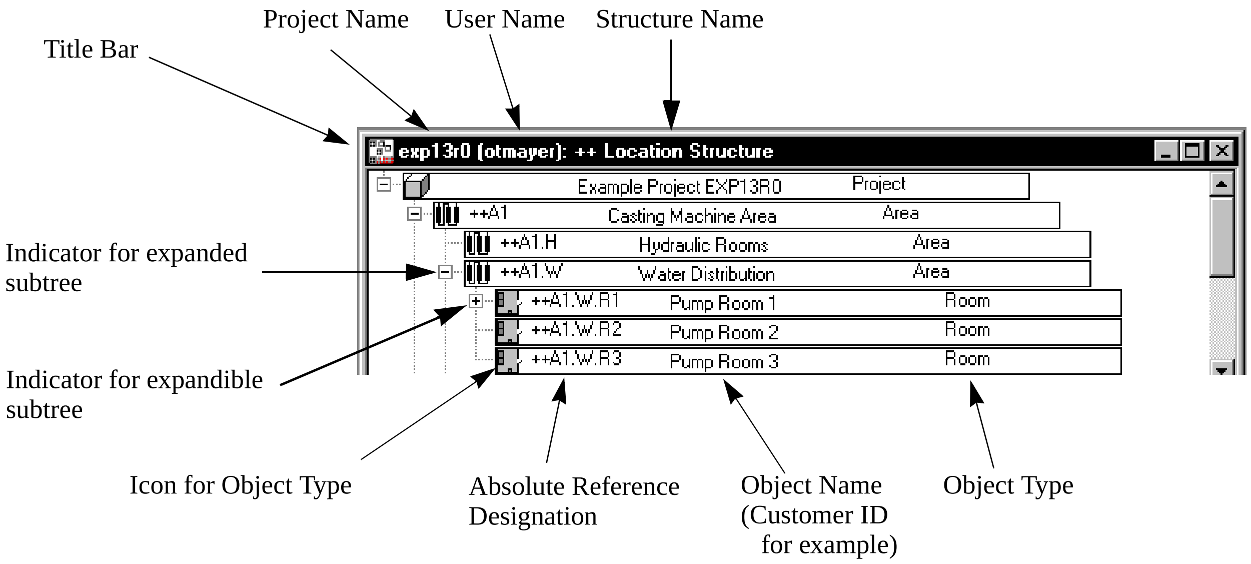


Figure 3-12. Example of the Object Area of a Structure Window

You can expand or compress a subtree by clicking the indicators ('+' or '-') in front of the Advant object. Alternatively you can use the **View | Expand** (see Section 3.7.3.1, Expand) or **View | Compress** (see Section 3.7.3.3, Compress Subtree) menu commands.

You can copy single Advant objects or bunches of Advant objects into other structure windows. You might be interested for example, to copy the boards and signals to a node control structure, but not the racks. As the hierarchy of Advant objects in certain structures is stored in the corresponding structure aspects, you may build up completely different structures in different structure windows, if meaningful. The order of Advant objects and also the parent-child relations between Advant objects may be different among different structures.

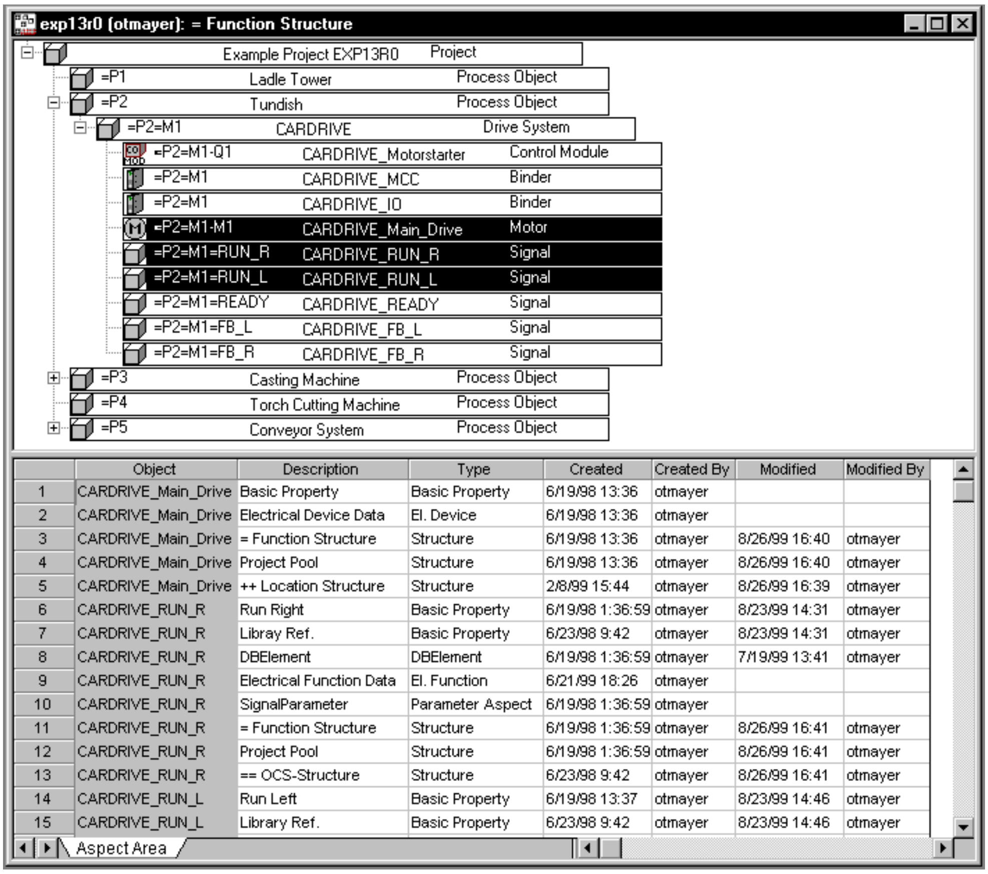
The picture of a single Advant object as shown in Figure 3-12 consists of a surrounding rectangle, an icon, which is specific for a certain object type, and some text fields. The text fields that shall be displayed, and the layout of the rectangle can be determined with the **Options | Project** menu command (see Section 3.6.4.1, Project). It is possible for example, to display the absolute reference designation behind instead of before the Advant object name, or to display the relative reference designation instead.

Aspect Area

In Figure 3-12 the object area of the structure window is shown, only. But the structure window consists of the object and the aspect area. The aspect area of a structure window looks the same as the aspect area of a pool window as shown in Figure 3-10. Between the object and the aspect area is the split bar, which can be shifted with the mouse to increase or decrease one of the areas. It is possible to hide the aspect area completely (see Section , Split Vertically). This may speed up selecting objects in the object area.

The aspect area hosts a table (see Figure 3-13). A row lists the attributes of a certain aspect. In the first column the row number is displayed. The second column hosts the name of the Advant object, the aspect belongs to.

The navigation within the aspect area and how to edit the text of certain cells is described in Section A.1, Special Keys for Aspect Area Navigation.



exp13r0 (otmayer): = Function Structure

	Example Project EXP13R0	Project
=P1	Ladle Tower	Process Object
=P2	Tundish	Process Object
=P2=M1	CARDRIVE	Drive System
=P2=M1-Q1	CARDRIVE_Motorstarter	Control Module
=P2=M1	CARDRIVE_MCC	Binder
=P2=M1	CARDRIVE_IO	Binder
=P2=M1-M1	CARDRIVE_Main_Drive	Motor
=P2=M1=RUN_R	CARDRIVE_RUN_R	Signal
=P2=M1=RUN_L	CARDRIVE_RUN_L	Signal
=P2=M1=READY	CARDRIVE_READY	Signal
=P2=M1=FB_L	CARDRIVE_FB_L	Signal
=P2=M1=FB_R	CARDRIVE_FB_R	Signal
=P3	Casting Machine	Process Object
=P4	Torch Cutting Machine	Process Object
=P5	Conveyor System	Process Object

	Object	Description	Type	Created	Created By	Modified	Modified By
1	CARDRIVE_Main_Drive	Basic Property	Basic Property	6/19/98 13:36	otmayer		
2	CARDRIVE_Main_Drive	Electrical Device Data	El. Device	6/19/98 13:36	otmayer		
3	CARDRIVE_Main_Drive	= Function Structure	Structure	6/19/98 13:36	otmayer	8/26/99 16:40	otmayer
4	CARDRIVE_Main_Drive	Project Pool	Structure	6/19/98 13:36	otmayer	8/26/99 16:40	otmayer
5	CARDRIVE_Main_Drive	++ Location Structure	Structure	2/8/99 15:44	otmayer	8/26/99 16:39	otmayer
6	CARDRIVE_RUN_R	Run Right	Basic Property	6/19/98 1:36:59	otmayer	8/23/99 14:31	otmayer
7	CARDRIVE_RUN_R	Libray Ref.	Basic Property	6/23/98 9:42	otmayer	8/23/99 14:31	otmayer
8	CARDRIVE_RUN_R	DBElement	DBElement	6/19/98 1:36:59	otmayer	7/19/99 13:41	otmayer
9	CARDRIVE_RUN_R	Electrical Function Data	El. Function	6/21/99 18:26	otmayer		
10	CARDRIVE_RUN_R	SignalParameter	Parameter Aspect	6/19/98 1:36:59	otmayer		
11	CARDRIVE_RUN_R	= Function Structure	Structure	6/19/98 1:36:59	otmayer	8/26/99 16:41	otmayer
12	CARDRIVE_RUN_R	Project Pool	Structure	6/19/98 1:36:59	otmayer	8/26/99 16:41	otmayer
13	CARDRIVE_RUN_R	== OCS-Structure	Structure	6/23/98 9:42	otmayer	8/26/99 16:41	otmayer
14	CARDRIVE_RUN_L	Run Left	Basic Property	6/19/98 13:37	otmayer	8/23/99 14:46	otmayer
15	CARDRIVE_RUN_L	Library Ref.	Basic Property	6/23/98 9:42	otmayer	8/23/99 14:46	otmayer

Figure 3-13. Example of a Structure Window

A certain cell of the table holds a single attribute of a certain aspect.

The data that are displayed in the aspect area, depend on the selection in the object area. If you change the selection, the data displayed in the aspect area will follow that selection. If you select an Advant object, all aspects of that object will be listed in the aspect area, if they are not suppressed by a filter. This works for multiple selection of Advant objects, too. The number of selected objects is displayed in the first field of the status bar. Therefore, the aspect area offers the possibility to visualize aspects of several Advant objects at a time.

Further on the aspect area allows you to change attributes directly, if possible. For some attributes you can edit the text in the cells. To insert or modify text, select the cell and press **F2** or perform a double-click on the cell. Then the cursor will change its form to an I-beam, and you can position it where you want to make the changes. If you are done, select another cell to terminate the activity.

For other attribute types you will get a list box if you position the cursor at a corresponding cell. Select a proper value from the list and then select another cell.

Some other attributes are read-only.

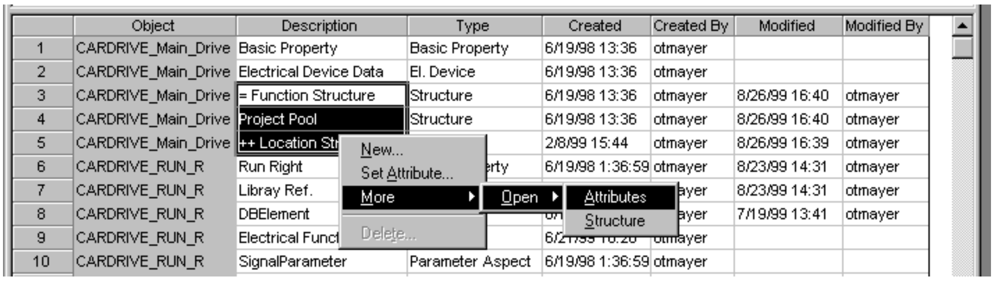
You can specify which attributes are displayed and in which order with the **Format | Column Order** menu command. Further on you can specify the layout of the table with the aid of the commands of the **Format** menu (see Section 3.8.4, Format Menu).

You can close the aspect area by moving the adjustable separator between object and aspect down to the bottom of the structure window or with the **View | Hide Aspect Area** menu command (see Section , Split Vertically).

You can save your settings with the **Format | Save as Default** menu command. These settings are stored on your PC and therefore exclusive for you. Other members of the project may use other settings. The Format menu is available in the aspect context only. To switch to it, click into the aspect area.

The context menus available for the aspect area are shown in Figure 3-14. With the **New** command you can insert a new aspect. This is only possible, if you have not more than one object in the object area selected. These commands can be used as alternative to the menu commands available under the **Aspect** menu.

To access the context menu, select cells in the aspect area and click the right mouse button.

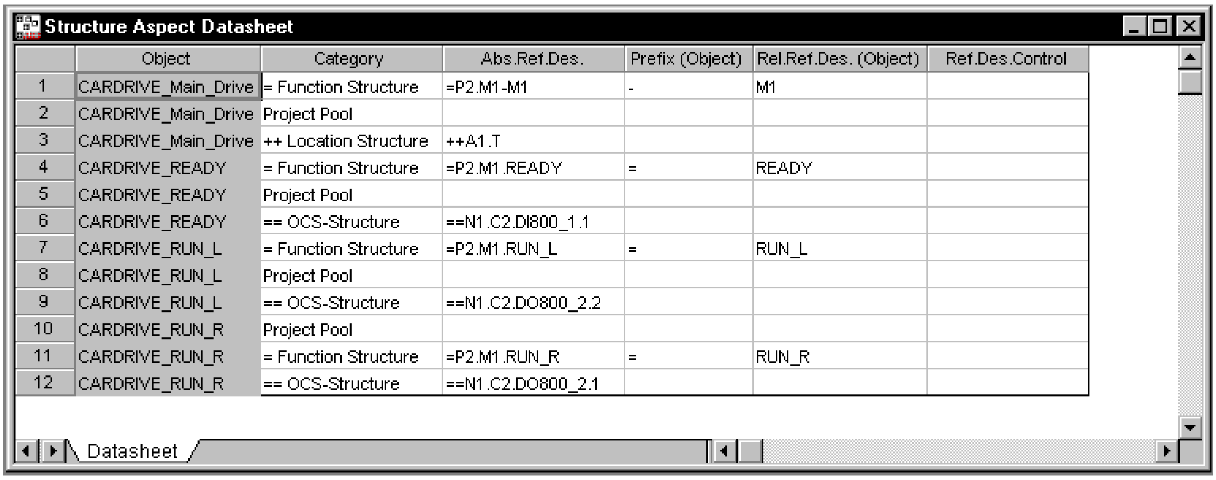


	Object	Description	Type	Created	Created By	Modified	Modified By
1	CARDRIVE_Main_Drive	Basic Property	Basic Property	6/19/98 13:36	otmayer		
2	CARDRIVE_Main_Drive	Electrical Device Data	El. Device	6/19/98 13:36	otmayer		
3	CARDRIVE_Main_Drive	= Function Structure	Structure	6/19/98 13:36	otmayer	8/26/99 16:40	otmayer
4	CARDRIVE_Main_Drive	Project Pool	Structure	6/19/98 13:36	otmayer	8/26/99 16:40	otmayer
5	CARDRIVE_Main_Drive	++ Location Str		2/8/99 15:44	otmayer	8/26/99 16:39	otmayer
6	CARDRIVE_RUN_R	Run Right	erty	6/19/98 1:36:59	otmayer	8/23/99 14:31	otmayer
7	CARDRIVE_RUN_R	Libray Ref.			ayer	8/23/99 14:31	otmayer
8	CARDRIVE_RUN_R	DBElement			ayer	7/19/99 13:41	otmayer
9	CARDRIVE_RUN_R	Electrical Funct			ayer		
10	CARDRIVE_RUN_R	SignalParameter	Parameter Aspect	6/19/98 1:36:59	otmayer		

Figure 3-14. Context Menu for Aspect Area

Data Sheets

In addition to the aspect area you can display so-called data sheets. You can open a data sheet by selecting a number of aspects (at least two) of the same aspect type (basic property and structure aspects), click the right mouse button and then the **Open** command: then the data sheet will be displayed. An example is shown in Figure 3-15.



	Object	Category	Abs.Ref.Des.	Prefix (Object)	Rel.Ref.Des. (Object)	Ref.Des.Control
1	CARDRIVE_Main_Drive	= Function Structure	=P2.M1-M1	-	M1	
2	CARDRIVE_Main_Drive	Project Pool				
3	CARDRIVE_Main_Drive	++ Location Structure	++A1.T			
4	CARDRIVE_READY	= Function Structure	=P2.M1.READY	=	READY	
5	CARDRIVE_READY	Project Pool				
6	CARDRIVE_READY	== OCS-Structure	==N1.C2.DI800_1.1			
7	CARDRIVE_RUN_L	= Function Structure	=P2.M1.RUN_L	=	RUN_L	
8	CARDRIVE_RUN_L	Project Pool				
9	CARDRIVE_RUN_L	== OCS-Structure	==N1.C2.DO800_2.2			
10	CARDRIVE_RUN_R	Project Pool				
11	CARDRIVE_RUN_R	= Function Structure	=P2.M1.RUN_R	=	RUN_R	
12	CARDRIVE_RUN_R	== OCS-Structure	==N1.C2.DO800_2.1			

Figure 3-15. Example of a Data Sheet

A data sheet looks similar to an aspect area. The difference is that it holds another category of data: while an aspect area holds registered data, that are administered by the Aspect Request Broker, a data sheet lists aspect attributes that are private for the Structure Builder. The handling of data sheets is the same as for aspect areas. For data sheets you can save your layout settings in the same way as for aspect areas with the **Format | Save as Default** menu command (see Section 3.8.4.8, Save as Default).

Display Differences

If you add an Advant object in a certain structure while you have a pool window open, the pool window will not be updated. But modifications of attributes or deletion of Advant objects performed in structure windows will be shown in the pool window, too.

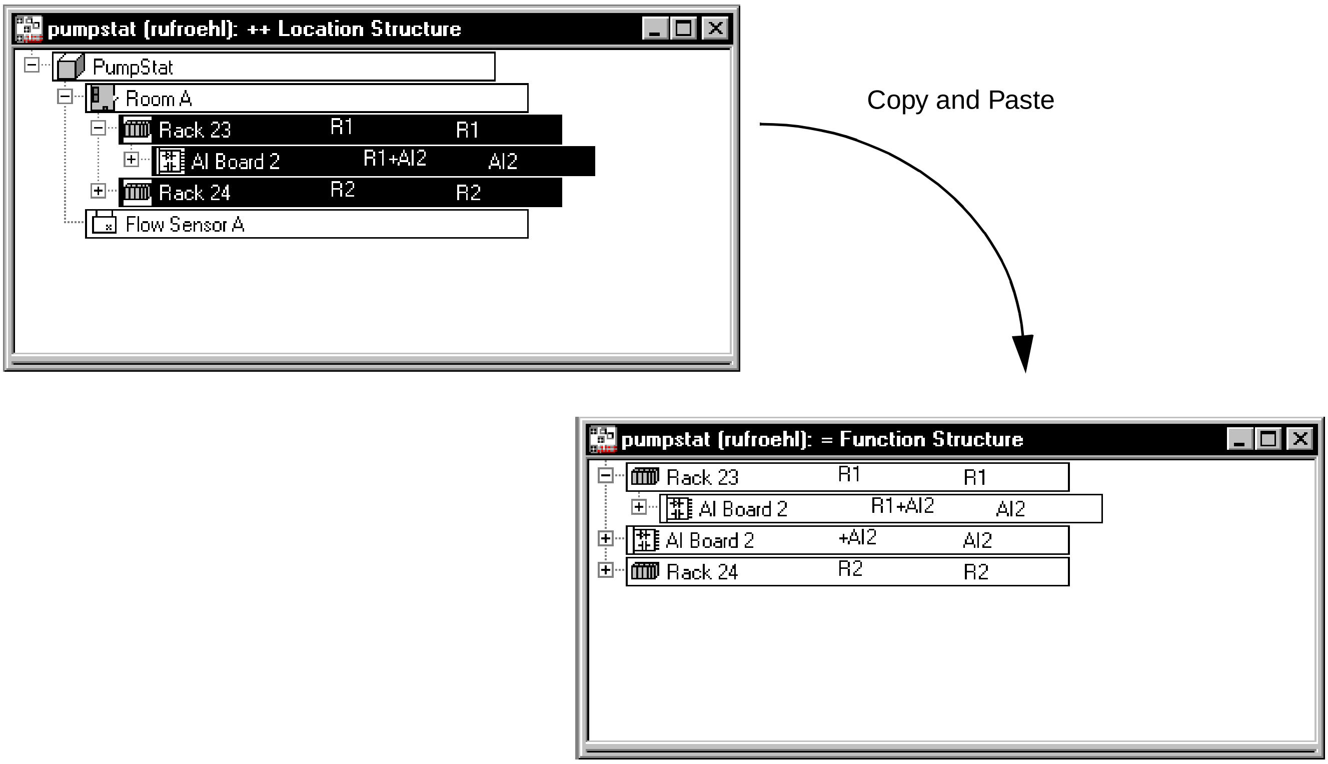
Copying Hierarchies of Advant Objects

For copying Advant objects two different methods are available:

- Drag and drop
- Copy and paste.

In both cases all child objects are copied together with their parent objects. It is not necessary to expand and select the whole subtree before copying.

The behavior to copy objects together with their whole subtree will be consecutively applied to each selected object. This may lead to a duplication of subtrees depending on the actual selection. This is explained with the example shown in Figure 3-16:


pumpstat (rufroehl): ++ Location Structure
Copy and Paste
pumpstat (rufroehl): = Function Structure

PumpStat
Room A
Rack 23 R1 R1
AI Board 2 R1+AI2 AI2
Rack 24 R2 R2
Flow Sensor A

Rack 23 R1 R1
AI Board 2 R1+AI2 AI2
AI Board 2 +AI2 AI2
Rack 24 R2 R2

Figure 3-16. Copy Behavior Including Whole Subtrees

Three Advant objects are selected in the **++Location Structure** and shall be copied into the empty =**Function Structure** via copy and paste. At first Rack 23 will be copied with all its children. The action results in Rack 23 and AI Board 2 as child of Rack 23. The next selected object is AI Board 2. This object again will be copied with its children. The same applies to the third selected object. All three objects will be inserted at the same level in the structure hierarchy, the one you have selected before you issued the **Paste** menu command.

Notice, that the absolute reference designations of AI Board 2 in the **=Function Structure** are different. The objects's absolute reference designation is displayed in the middle of the object's rectangle, while the relative reference designations is placed at the right side.

If you don't want to duplicate AI Board 2, deselect it the **++Location Structure** or compress Rack 23 before you select Rack 23 and Rack 24.

Copy Selected Objects Only (Copy/Paste Without Subtree)

If you only want to copy the selected objects without their subtrees, you can perform one of following alternatives:

- Drag and drop:
  Drag the objects you want to copy, but click the right mouse button instead of the left one while dragging, drop them to the destination and release the right mouse button there.

Then the following context menu will be displayed:

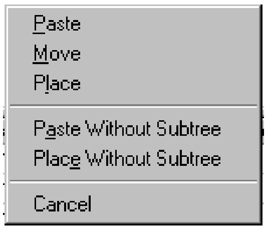


Figure 3-17. Context Menu for Drag and Drop

- Select **Paste**, **Move**, or **Place** if you want to copy, move, or place the selected Advant object together with it's children at the destination
- Select **Paste Without Subtree** or **Place Without Subtree** if you want to copy the parent object only. Moving of the parent object only is not possible.
- Select **Cancel** to terminate the command.

- Copy and paste:
  When you have copied the selected Advant objects with the **Edit | Copy** menu command to the clip board, use the **Edit | Paste Without Subtree** menu command to copy the selected objects only.

In both cases the selected objects will be copied without subtrees. This situation is illustrated with Figure 3-18 and Figure 3-19: If you have copied the selection shown in Figure 3-18 with the **Edit | Copy** menu command to the clip board, a consecutive **Edit | Paste Without Subtree** menu command will insert the following Advant objects at the destination: Rack 23, AI Board 2, and Rack 24. The **Without Subtree** attribute suppresses insertion of the child objects of AI Board 2, as shown in Figure 3-19.

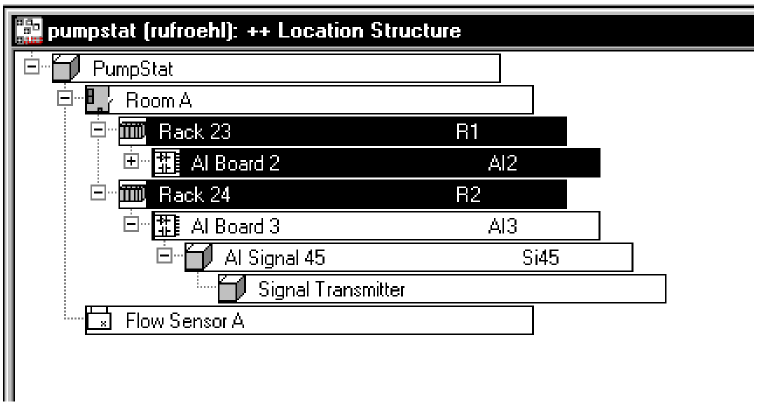
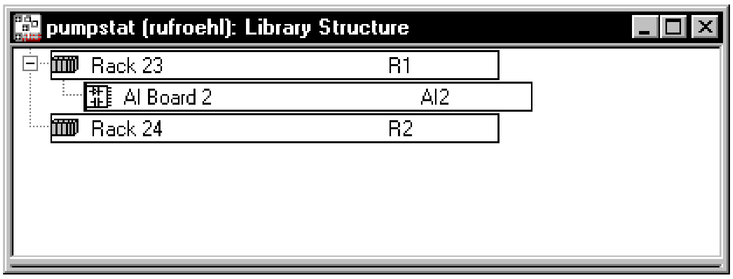


Figure 3-18. Illustration of Paste Without Subtree Behavior - Source



Rack 23 R1
AI Board 2 AI2
Rack 24 R2

Figure 3-19. Illustration of Paste Without Subtree Behavior - Destination

Move, Place, Copy Differences

Within Structure Builder three methods to handle Advant objects between structures or within a structure are available: move, place, and copy.

When you move an object, it will be taken from the position where it resides and will be put to another location. After a move operation the object will not reside at its original position anymore.

When you copy an object, a new object will be created at the new location. The original object will still reside at the original location.

When you place an object, the same object occurs multiply. If you modify the placed object, you will see the modifications at all locations where it occurs.

3.5.6 Object Selection Techniques

3.5.6.1 Mouse Selection

You can use two kinds of object selections:

- Single object selection:

  Point at an Advant object and click once with the left mouse button.

- Multiple object selection:

  By multiple object selection you can select more than one object at the same time. Multiple selection is further classified as

  - Continuous selection (range selection)
  - Disjoint selection (selected objects are separated by non-selected objects).

  You can combine continuous selection and disjoint selection.

Selected objects are highlighted.

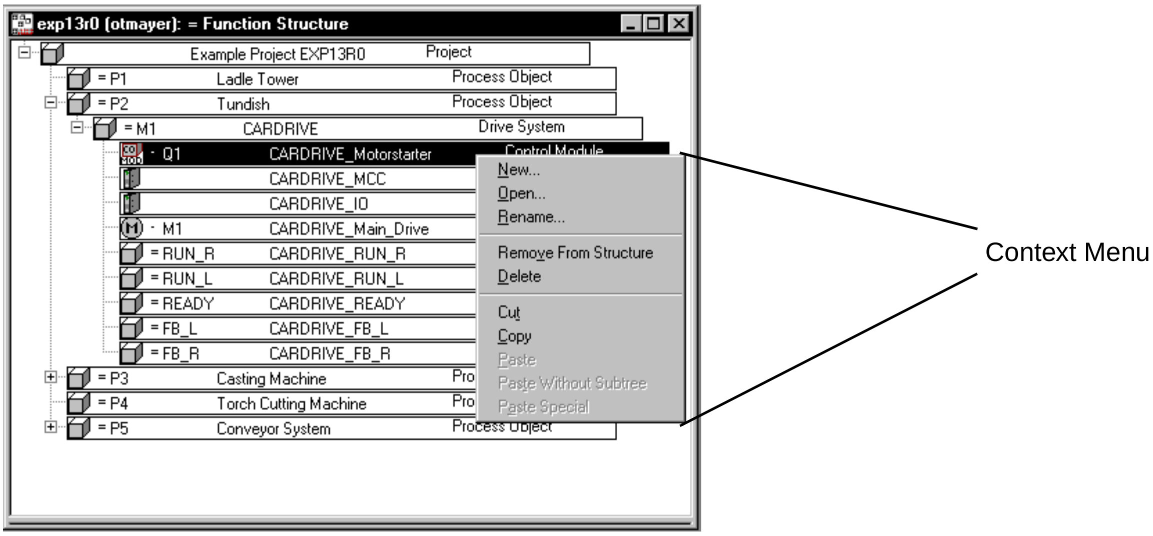
You can operate on a selected object, for example copy it, move it, or delete it. The Structure Builder follows an object-action model: select the object(s) you want to operate on always at first and then the function you want to execute.

To deselect all your objects just click on an arbitrary object.

To deselect single objects see **Disjoint Selection** in this section.

Context Menus

For selected entities - Advant objects in the object area or aspects in the aspect area - context menus will pop, if you click the right mouse button somewhere in the Structure Builder's window. From this context menu you can select a command by clicking the command with the left mouse button. An example of a context menu for a selected Advant object is shown in Figure 3-20.

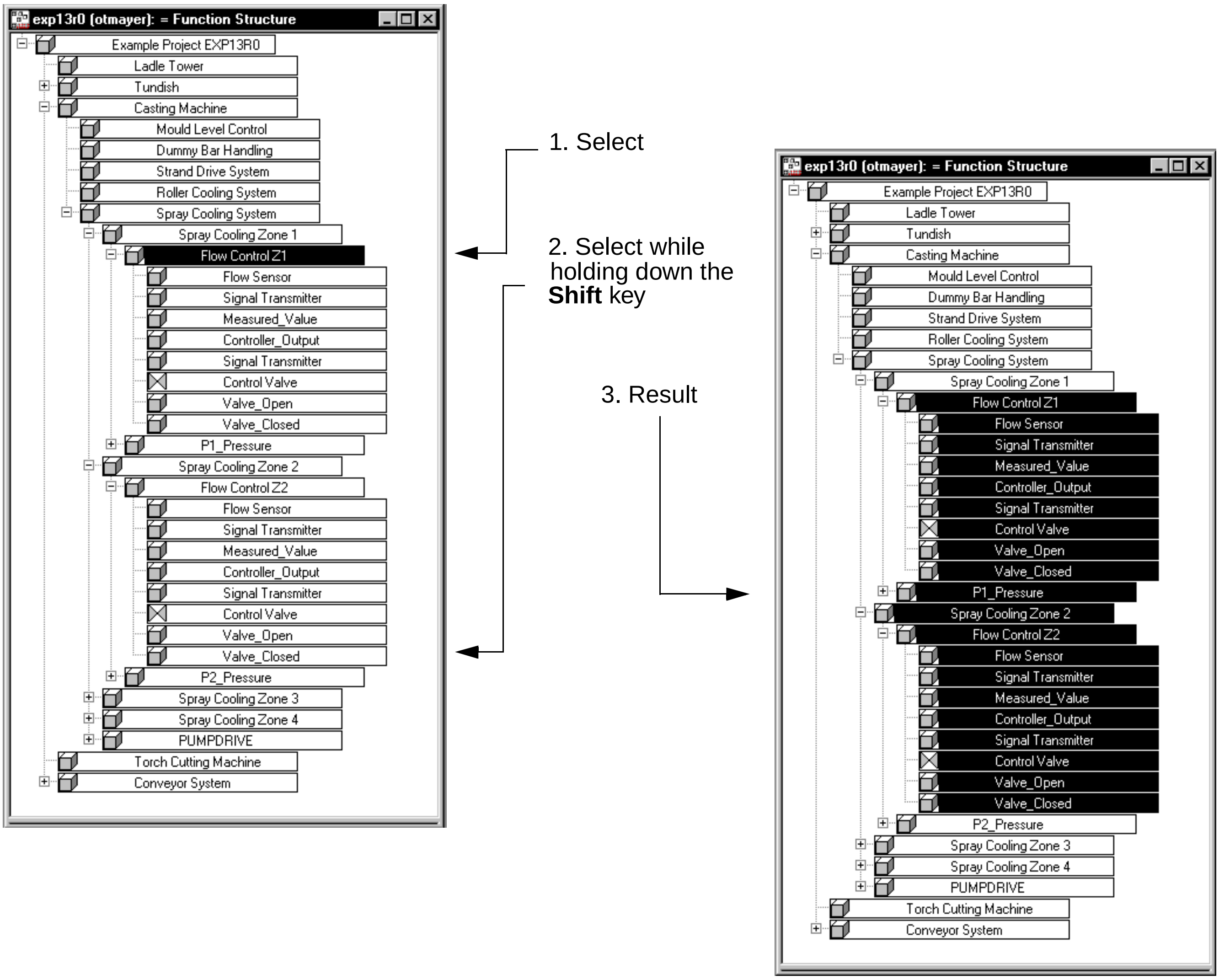


	Example Project EXP13R0	Project
= P1	Ladle Tower	Process Object
= P2	Tundish	Process Object
= M1	CARDRIVE	Drive System
- Q1	CARDRIVE_Motorstarter	Control Module
	CARDRIVE_MCC	
	CARDRIVE_IO	
- M1	CARDRIVE_Main_Drive	
= RUN_R	CARDRIVE_RUN_R	
= RUN_L	CARDRIVE_RUN_L	
= READY	CARDRIVE_READY	
= FB_L	CARDRIVE_FB_L	
= FB_R	CARDRIVE_FB_R	
= P3	Casting Machine	Pro
= P4	Torch Cutting Machine	Pro
= P5	Conveyor System	Process Object

Figure 3-20. Context Menu for the Selected Advant Object

Continuous Selection

Select the object where you want to start the selection. Hold down the **Shift** key and then select the object by which you will enclose your continuous selection. Only the displayed objects are selected, objects of hidden subtrees are not selected.



1. Select

2. Select while holding down the **Shift** key

3. Result

Figure 3-21. Continuous Selection of Objects

Disjoint Selection

Disjoint selection requires to hold down the **CTRL** key when you select an object. See Figure 3-22.

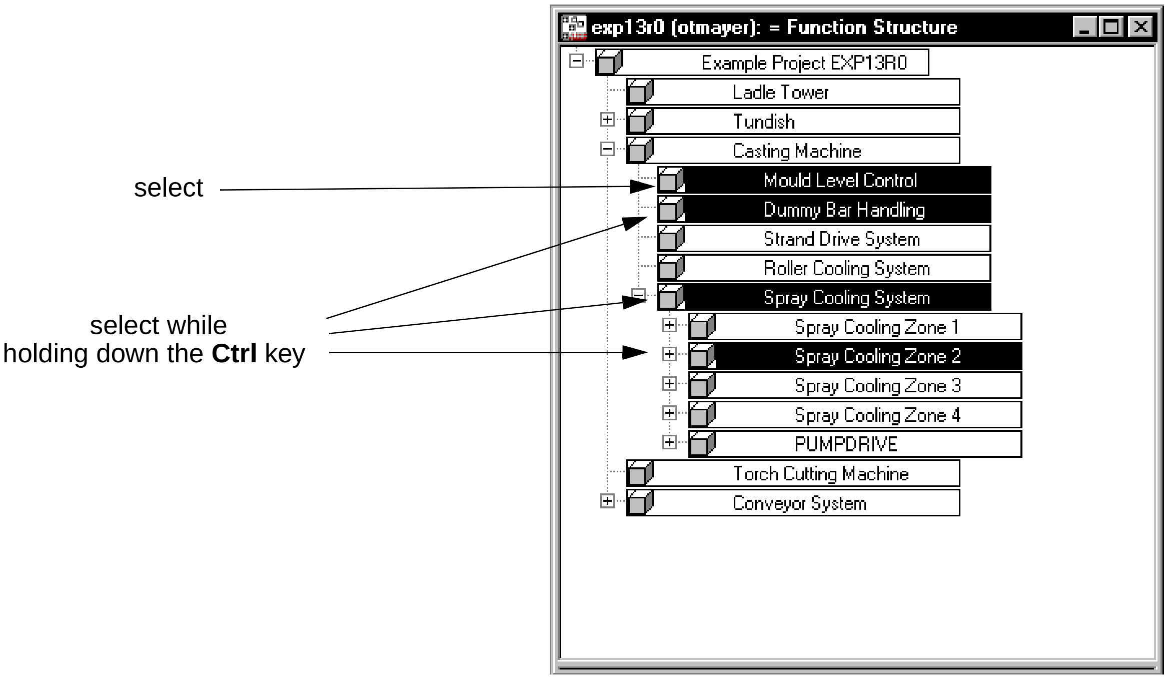
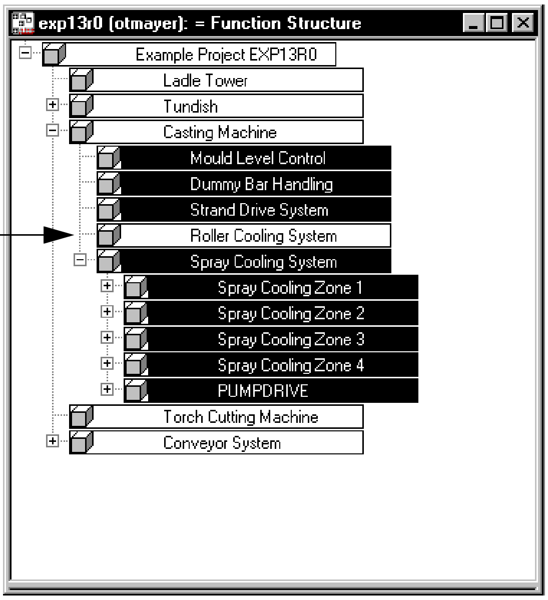


Figure 3-22. Disjoint Selection of Objects

To deselect all your objects just click on an arbitrary object.

To deselect single objects just select the object again holding down the **Ctrl** Key



exp13r0 (otmayer): = Function Structure

- Example Project EXP13R0
  - Ladle Tower
  - Tundish
  - Casting Machine
    - Mould Level Control
    - Dummy Bar Handling
    - Strand Drive System
    - Roller Cooling System
    - Spray Cooling System
      - Spray Cooling Zone 1
      - Spray Cooling Zone 2
      - Spray Cooling Zone 3
      - Spray Cooling Zone 4
      - PUMPDRIVE
  - Torch Cutting Machine
  - Conveyor System

select here while
holding down the **Ctrl** key

Figure 3-23. Deselection of Single Objects

NOTE

If you have several windows open and you choose any menu item representing a command to be performed on selected Advant objects, for example copy, move, or delete, those commands will only be performed on the selected Advant objects in the currently active window.

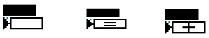
3.5.7 Techniques for Graphical Manipulation of Data

3.5.7.1 Drag and Drop

You can use drag and drop – as an efficient way to graphically manipulate your data – to place, move and copy Advant objects. Just grab a required object and position it, drag it to a new location either to place it in a new structure, to move it from its old position to a new one, or to copy the object.

To position an object at a new location in a structure you release it (drop it) at a certain target object

- Inside the object frame to insert it as first child of the target object. The cursor gets one of the following images, depending on the activity, move, place or copy.



- Right hand outside the target object to insert it below the target object on same level. The cursor gets an image like the one shown below, but possibly with another activity indicator ('=' or blank).

- Left hand outside the target object to insert it above the target object on same level. The cursor gets an image like the one shown below, but possibly with another activity indicator ('=' or blank).

If you are dragging two or more objects the cursor image will indicate this as shown in the example below:

If you drop it in the empty part of the structure window it will be inserted as root object.

To drag an object, point at it, hold down the left mouse button and then position the mouse pointer over the required target object. While dragging, the mouse pointer indicates if you are dragging one ore more objects.

To drop an object at the target object, release the left mouse button.

Table 3-1 gives an overview of functions which are available via drag and drop:

To	**Same Project**		**Different Project**	
From	**(Selected) Pool**	**Project Structure (arbitrary)**	**(Selected) Pool**	**Project Structure (arbitrary)**
(Selected) Pool	copy	copy place	copy	copy
Project Structure	copy	move copy place	copy	copy

Table 3-1. Drag and Drop Functions

Symbols presented while dragging:

= (equal sign) for placing

+ (plus sign) for copying

no additional sign (blank) for moving.

3.5.8 Special Key and Mouse Button Bindings

Mouse Button Assignment

Action with Left Mouse Button	Function
Single Click	Object selection (dependent on selection mode)
Double Click	Open the Object Window

Table 3-2. Mouse Button Assignment

Modifier Keys

Modifier keys for drag and drop (have to be hold down while dragging and dropping):

Function:	Modifier Key:
Move	Alt
Copy	Ctrl
Place	Shift

Table 3-3. Modifier Keys

Drag and Drop Defaults (no modifier key pressed)

To From	Same Project		Different Project	
	(Selected) Pool	**Project Structure**	**(Selected) Pool**	**Project Structure**
(Selected) Pool		place	copy	copy
Project Structure	copy	move(1) place(2)	copy	copy

Table 3-4. Drag and Drop Defaults

(1) different structure
(2) same structure

3.5.9 Inserting/Deleting Advant Objects

3.5.9.1 Copying Advant Objects in the Selected Pool

You can copy Advant objects in the selected pool.

When you copy an object, a new object is created in the selected pool.

Copying by Using Menu Items

1. Select the object you want to copy.
2. Choose **Copy** in the **Edit** menu.
3. Select the object where you want to place the copy.
4. Choose **Paste** in the **Edit** menu.

The object is copied with its aspects (except structure aspects) and placed below the selected target object.

If you want to copy an object but to exclude one or several aspects from being copied, then choose **Paste Special** from the **Edit** menu. The **Paste Special** dialog appears in which you can deselect aspects. You can also select how the copy shall be placed in relation to the target object (as child, below or above the target object).

Copying by Using Drag and Drop

To copy an object inside the pool you drag it to a target object in the pool and drop it there. While dragging hold down the **Ctrl** key.

3.5.9.2 Deleting Advant Objects in the Selected Pool

You can delete an Advant object in the pool.

When you have placed this object in one or more of your structures it will be removed there.

To delete an object select it and choose **Delete** in the **Object** menu.

Shortcut: **BackSpace** or **Del** key.

You can also select multiple objects for deleting.

3.5.9.3 Placing Advant Objects into Structures

To give an object a certain location in one of your structures you have to place it. When you place an object you do not create a new object. The number of objects in the pool remains constant. The object gets an additional structure aspect containing the information about the new structure position.

You can place an object in one or more structures.

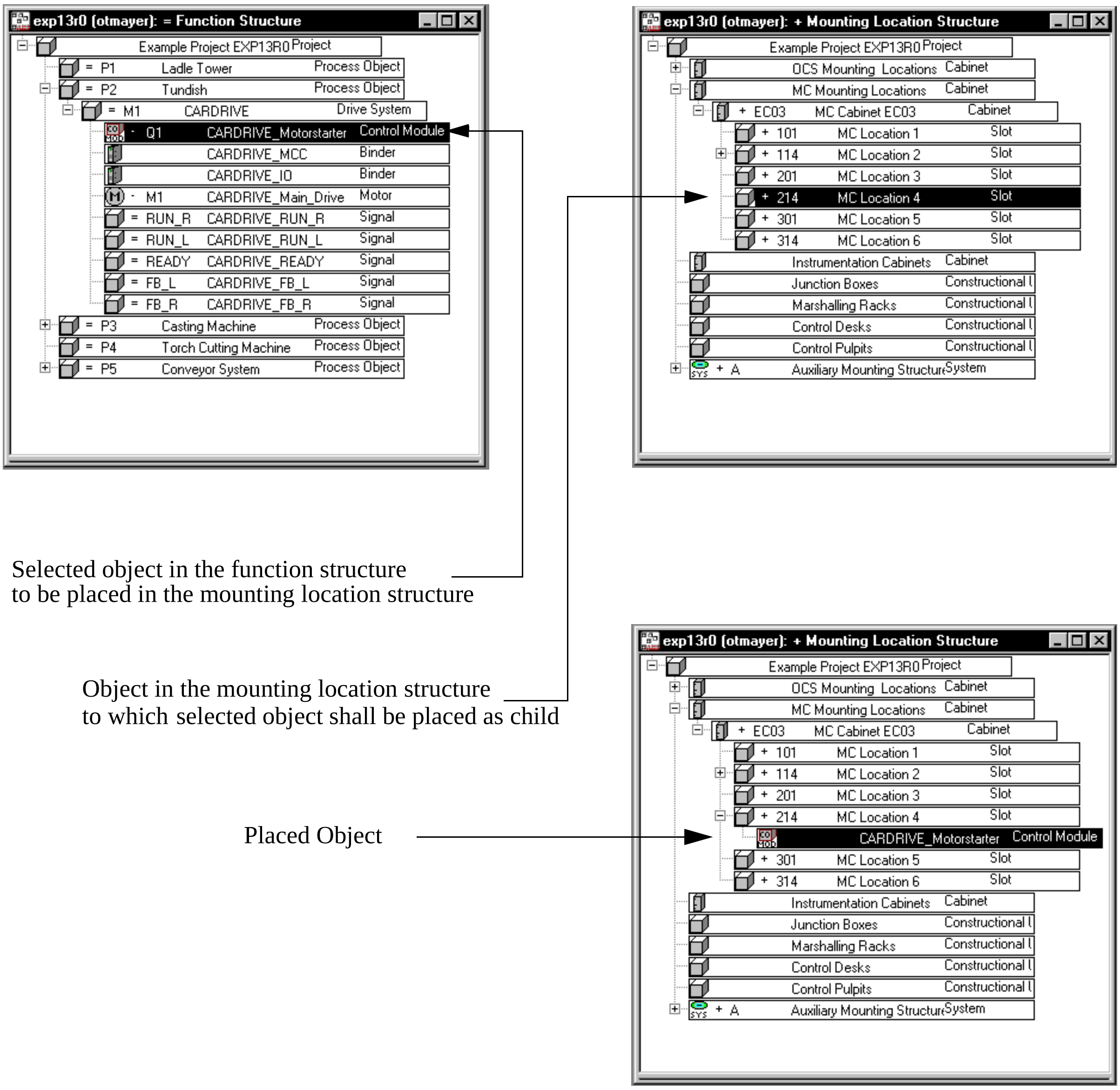
You can place an object in the same structure one or several times.

Placing an Object Using Menu Items

1. Select the object(s) to be placed.
2. Choose **Copy** from the **Edit** menu.
3. Select the object to which selected object(s) shall be placed.
4. Choose **Paste Special** in the **Edit** menu.
5. The **Paste Special** dialog appears.
6. Select Action **Place.**
7. Select one of the placing relations to the target object:
   As Child / Above - / Below - On Same Level.
8. Click **OK**.

The object is placed on the selected position.

Placing an Object Using Menu Items


exp13r0 (otmayer): = Function Structure

```
Example Project EXP13R0   Project
  = P1   Ladle Tower        Process Object
  = P2   Tundish            Process Object
    = M1   CARDRIVE           Drive System
      - Q1      CARDRIVE_Motorstarter   Control Module
                CARDRIVE_MCC            Binder
                CARDRIVE_IO             Binder
      - M1      CARDRIVE_Main_Drive     Motor
      = RUN_R   CARDRIVE_RUN_R          Signal
      = RUN_L   CARDRIVE_RUN_L          Signal
      = READY   CARDRIVE_READY          Signal
      = FB_L    CARDRIVE_FB_L           Signal
      = FB_R    CARDRIVE_FB_R           Signal
  = P3   Casting Machine        Process Object
  = P4   Torch Cutting Machine  Process Object
  = P5   Conveyor System        Process Object
```

exp13r0 (otmayer): + Mounting Location Structure

```
Example Project EXP13R0   Project
  OCS Mounting Locations   Cabinet
  MC Mounting Locations    Cabinet
    + EC03   MC Cabinet EC03   Cabinet
      + 101   MC Location 1   Slot
      + 114   MC Location 2   Slot
      + 201   MC Location 3   Slot
      + 214   MC Location 4   Slot
      + 301   MC Location 5   Slot
      + 314   MC Location 6   Slot
  Instrumentation Cabinets   Cabinet
  Junction Boxes             Constructional l
  Marshalling Racks          Constructional l
  Control Desks              Constructional l
  Control Pulpits            Constructional l
  + A   Auxiliary Mounting Structur   System
```

exp13r0 (otmayer): + Mounting Location Structure

```
Example Project EXP13R0   Project
  OCS Mounting Locations   Cabinet
  MC Mounting Locations    Cabinet
    + EC03   MC Cabinet EC03   Cabinet
      + 101   MC Location 1   Slot
      + 114   MC Location 2   Slot
      + 201   MC Location 3   Slot
      + 214   MC Location 4   Slot
                CARDRIVE_Motorstarter   Control Module
      + 301   MC Location 5   Slot
      + 314   MC Location 6   Slot
  Instrumentation Cabinets   Cabinet
  Junction Boxes             Constructional l
  Marshalling Racks          Constructional l
  Control Desks              Constructional l
  Control Pulpits            Constructional l
  + A   Auxiliary Mounting Structur   System
```

Selected object in the function structure to be placed in the mounting location structure

Object in the mounting location structure to which selected object shall be placed as child

Placed Object

Figure 3-24. Placing an Object

Placing by Drag and Drop

To place an object you can drag it either from the selected pool or from a structure where it already has been placed in and drop it on a target object.

The dragged object is positioned as first child of the target object. It can be re-positioned via a Move operation.

If you drop the dragged object just on an empty space in one of your structure windows (not occupied by an other object) it is inserted as object on root level.

If you drop the dragged object left hand outside the target object frame it is placed above the target object on same level.

If you drop the dragged object right hand outside the target object frame it is placed below the target object on same level.

You can select multiple objects for placing with or without subtrees.

3.5.9.4 Copying Advant Objects in/into Structures

You can copy and place objects within a structure and between structures.
Multiple selection is possible.
The selected pool will contain the new objects.

Copying Advant Objects by Using Menu Items

1. Select the object(s) you want to copy.
2. Choose **Copy** in the **Edit** menu.
3. Select the target object which shall become parent of the copy/copies.
4. Choose **Paste** or **Paste Without Subtree** in the **Edit** menu.

The object is copied with its aspects (except structure aspects) and placed as child to the selected target object.

If you want to copy an object but to exclude one or several aspect types from being copied then choose **Paste Special** from the **Edit** menu. The **Paste Special** dialog appears in which you can deselect aspects. By using **Paste Special** you can also place the copy above or below the target object on same level.

1. Select object(s) to be copied.
2. Choose **Copy** in the **Edit** menu.
3. Select target object to which the copies of the selected object(s) shall be placed.
4. Choose **Paste Special** in the **Edit** menu.
5. The **Paste Special** dialog appears.
6. Select Action **Copy** and uncheck the field **With Subtree.**
7. Select one of the placing relations to the target object:
   As Child / Above - / Below - On Same Level
8. Click on **OK.**

Copying Advant Objects by Drag and Drop

To copy an object you drag it from its position in one of your structures or from the pool and drop it on the target object. While dragging hold down the **Ctrl** key.

The copy is inserted as first child of the target object. It can be re-positioned via Move.

If you drop the dragged object just on an empty space in one of your structure windows (not occupied by an other object) it is inserted as object on root level.

If you drop the dragged object left hand outside the target object frame it is copied above the target object on same level.

If you drop the dragged object right hand outside the target object frame it is copied below the target object on same level.

You can select multiple objects for copying with or without subtrees. If you drag the objects with the left mouse button clicked, the objects are copied with subtrees. If you drag them with the right mouse button clicked, a menu pops up and you can select whether copying shall be performed with or without subtrees.

The name of the source object is also copied, therefore the copy must be renamed.

3.5.9.5 Moving Advant Objects in Structures

To change the location of an object in one of your structures you can move it to an other location in the same or another structure. If the object to be moved is parent of a subtree you should always move the complete subtree.

Moving Advant Objects by Using Menu Items

1. Select object(s) to be moved.
2. Choose **Cut** in the **Edit** menu (the object(s) remain in the structure until you choose **Paste** from the **Edit** menu)).
3. Select object which shall become parent of the moved objects.
4. Choose **Paste** from the **Edit** menu.

The object is moved and placed as child to the selected target object.

Moving by Drag and Drop

To move an object you drag it from its position in one of your structures or the pool and drop it on the target object. While dragging hold down the **ALT** key.

The moved object is placed as first child of the target object.

If you drop the dragged object just on an empty space in one of your structure windows (not occupied by an other object) it is placed as object on root level.

If you drop the dragged object left hand outside the target object frame it is placed above the target object on same level.

If you drop the dragged object right hand outside the target object frame it is placed below the target object on same level.

You can select multiple objects for moving. If the object to be moved is parent of a subtree you should always move the complete subtree.

3.5.9.6 Removing Advant Objects from Structures

You can remove Advant objects from a structure position. If the object is placed in several structure positions the object will only be removed from the position where it is selected. The structure aspect of the object which indicates the position from where the object was removed is deleted.

Removing of an Advant object is only possible, if it has no child objects. If it has child objects, remove these objects at first.

To remove an object from a structure position:

1. Select the object.
2. Choose **Remove From Structure** in the **Object** menu.

3.5.9.7 Deleting Advant Objects

You can select the Advant object to be deleted either in the selected pool or in a structure. If you delete the object it will be removed from all structure positions and from the selected pool.

Deleting of an Advant object is also possible, if it has child objects.

To delete an Advant object:

1. Select the object.
2. Choose **Delete** in the **Object** menu.

3.5.9.8 Renaming Advant Objects

You can rename Advant objects. The object(s) to be renamed can be selected either in the selected pool or in one of the structures.

To rename an Advant object:

1. Select the object(s).
2. Choose **Rename** in the **Object** menu.
3. The **Rename Object** dialog appears.
4. Fill in the new object name into the **Name** field or use **Substitute Fields** to substitute parts of the old name(s).
5. Click on **OK**.

3.5.9.9 Deleting Structures

You can delete an empty structure. Before deleting it, use the **Object | Remove from Structure** menu command to remove all Advant objects from the structure.

To delete a structure:

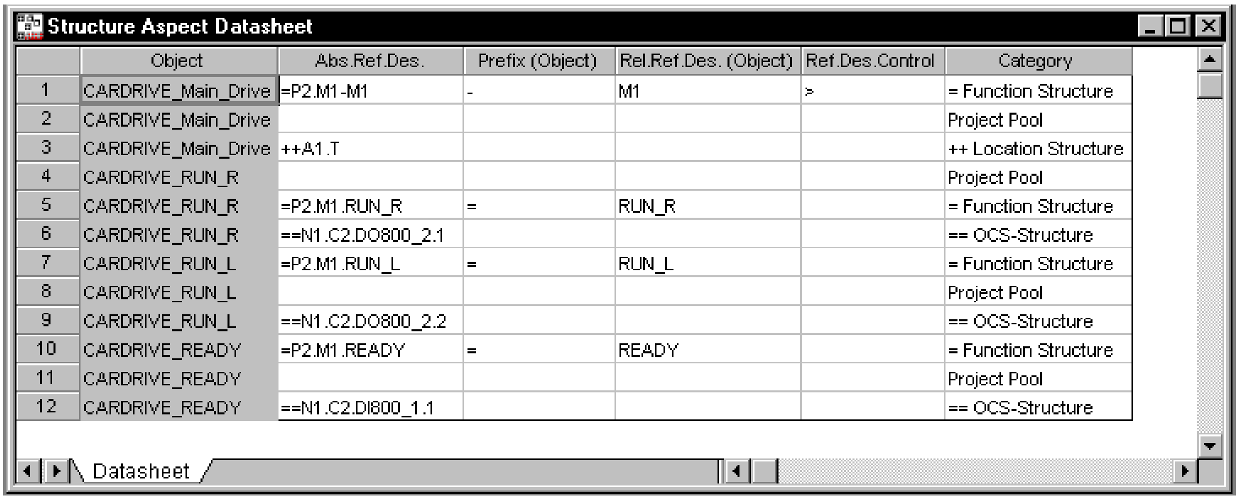
1. Choose **Structure** in the **Window** menu.
2. The **Open Structure** dialog appears.
3. Select the structure to be deleted.
4. Click **Delete.**

3.5.9.10 Inserting Reference Designations

You can assign to Advant objects in structures a relative reference designation. The relative reference designation designates the Advant object in the structure unambiguously (not checked by the system) with respect to its parent object.

To insert the relative reference designation, double-click an Advant object in the selected structure window to open the object window, select the corresponding structure aspect and open the attributes view. Now the **Set Attributes of Structure Aspect** (see Figure 3-86) dialog is displayed, where you can specify the reference designation.

An alternative way to insert reference designation is given by the datasheet of several structure aspects. How to open a datasheet is explained with the help of Figure 3-13: In the aspect area select all structure aspects of the selected objects. This can easily be done with the **View | Filter Aspects** menu command. Then issue the **More | Open | Attributes** menu command via the **Aspect** menu or by clicking the right mouse button to get the context menu. Then you will get a datasheet as shown in Figure 3-25. You can edit the reference designations directly in the datasheet.



	Object	Abs.Ref.Des.	Prefix (Object)	Rel.Ref.Des. (Object)	Ref.Des.Control	Category
1	CARDRIVE_Main_Drive	=P2.M1-M1	-	M1	>	= Function Structure
2	CARDRIVE_Main_Drive					Project Pool
3	CARDRIVE_Main_Drive	++A1.T				++ Location Structure
4	CARDRIVE_RUN_R					Project Pool
5	CARDRIVE_RUN_R	=P2.M1.RUN_R	=	RUN_R		= Function Structure
6	CARDRIVE_RUN_R	==N1.C2.DO800_2.1				== OCS-Structure
7	CARDRIVE_RUN_L	=P2.M1.RUN_L	=	RUN_L		= Function Structure
8	CARDRIVE_RUN_L					Project Pool
9	CARDRIVE_RUN_L	==N1.C2.DO800_2.2				== OCS-Structure
10	CARDRIVE_READY	=P2.M1.READY	=	READY		= Function Structure
11	CARDRIVE_READY					Project Pool
12	CARDRIVE_READY	==N1.C2.DI800_1.1				== OCS-Structure

Figure 3-25. Structure Aspect Datasheet

It is distinguished between relative and absolute reference designations. A relative designation is given to a certain object and is meant relative to the object's parent object. An absolute designation refers to the root of a structure. Usually, absolute designations will be build by concatenating all relative reference designations from the root object down to the dedicated object. In a concatenated designations, you can specify whether a separator shall be inserted between the relative designations or not.

An example is shown in Figure 3-12: The object Pump Room 1 has an absolute reference designation ++A1.W.R1. The prefix indicates that this is a location, while dots are used as separators between the relative reference designations.

You can specify with control elements the use of reference designations: You can specify that

- At a certain level concatenation of designations shall stop, or that
- At a certain level a new origin for another absolute designation shall be defined.

It is also possible to insert reference designations for aspects. You can specify them in the **Object Window**. Select an aspect and click **Edit** to insert a designation or a prefix.

3.6 Configuration/Application Building Menus; Project Context

3.6.1 Introduction

The description of menus of Structure Builder is structured on top level according to the context. When you work with Structure Builder the application can stay in three different states or contexts: **Project**, **Object** and **Aspect**. Depending on its context, **Project**, **Object**, or **Aspect** is the name of the left-most menu of Structure Builder**'s** menu bar. When you start the application, it is in the **Project** context, because the main tasks you might perform now is project administration or opening a project. When working in another context, the **Project** menu is still there, but at another position in the menu bar, shifted to the right.

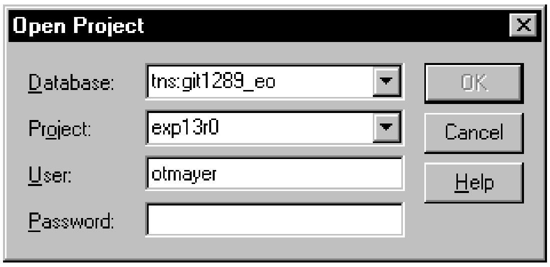
Depending on where you click in a structure window, into the object area or the aspect area, the menu bar of Structure Builder adapts to the possible tasks in this context, **Object** or **Aspect**.

Therefore context means, that the menu bar will context-sensitively change when you a going to perform certain activities that are project, object, or aspect related.

3.6.2 Project Menu

3.6.2.1 Open

Use the **Project | Open** menu command to open an existing project. Then the following dialog is displayed:



Database: tns:git1289_eo
Project: exp13r0
User: otmayer
Password:

Figure 3-26. Open Project Dialog

Enter the required data and click **OK**. Now you will be logged into the database for the selected project. As alternative you may use the **Project | Recent Project List** menu command to open a project you have worked with recently (see Section 3.6.2.7, Recent Project List). The entry fields for **Database** and **Project** consist of drop-down list boxes, which store the earlier used entries. As this information is stored on your client PC, it may be that this information is not valid anymore. To remove entries from the list box, use the **Delete** button in the dialog of the **Options | Project** menu command (see Section 3.6.4.1, Project).

It is possible to open more than one project. If you want to open another project, use the **Project | Open** command again.

If you are going to open a project made with a version of Structure Builder older than the current one, a message box will inform you about that and you can open the Upgrade Dialog (see Section 3.6.2.4, Upgrade).

Dialog Controls

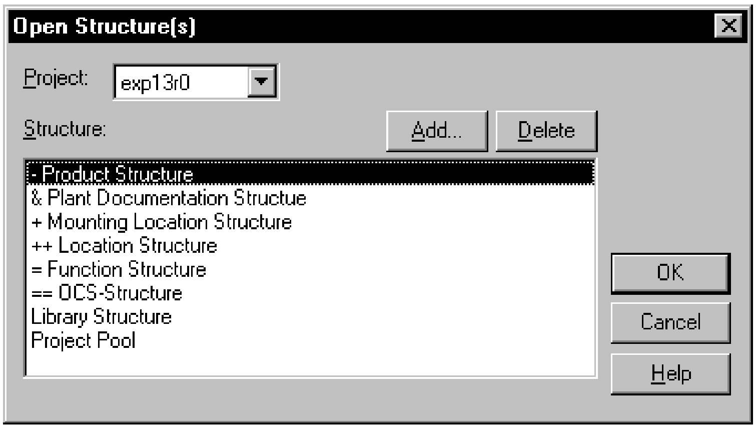
Database
You can enter a database name. The database name was specified during the installation of Structure Builder. You can work with one database at a time and on one database server.

Project
Enter the project name. A project can be created with the **Project | Administration** menu command (see Section 3.6.2.3, Administration).

User Name
Enter your user name. To be able to open the project, your name must be assigned to the project by your administrator. This can be performed with the **Project | Administration** menu command (see Section 3.6.2.3, Administration).

Password
Enter your password for logging into the project's database.

After clicking **OK** the **Open Structure(s)** dialog will be displayed. Here you can select one or more structures you want to work with.



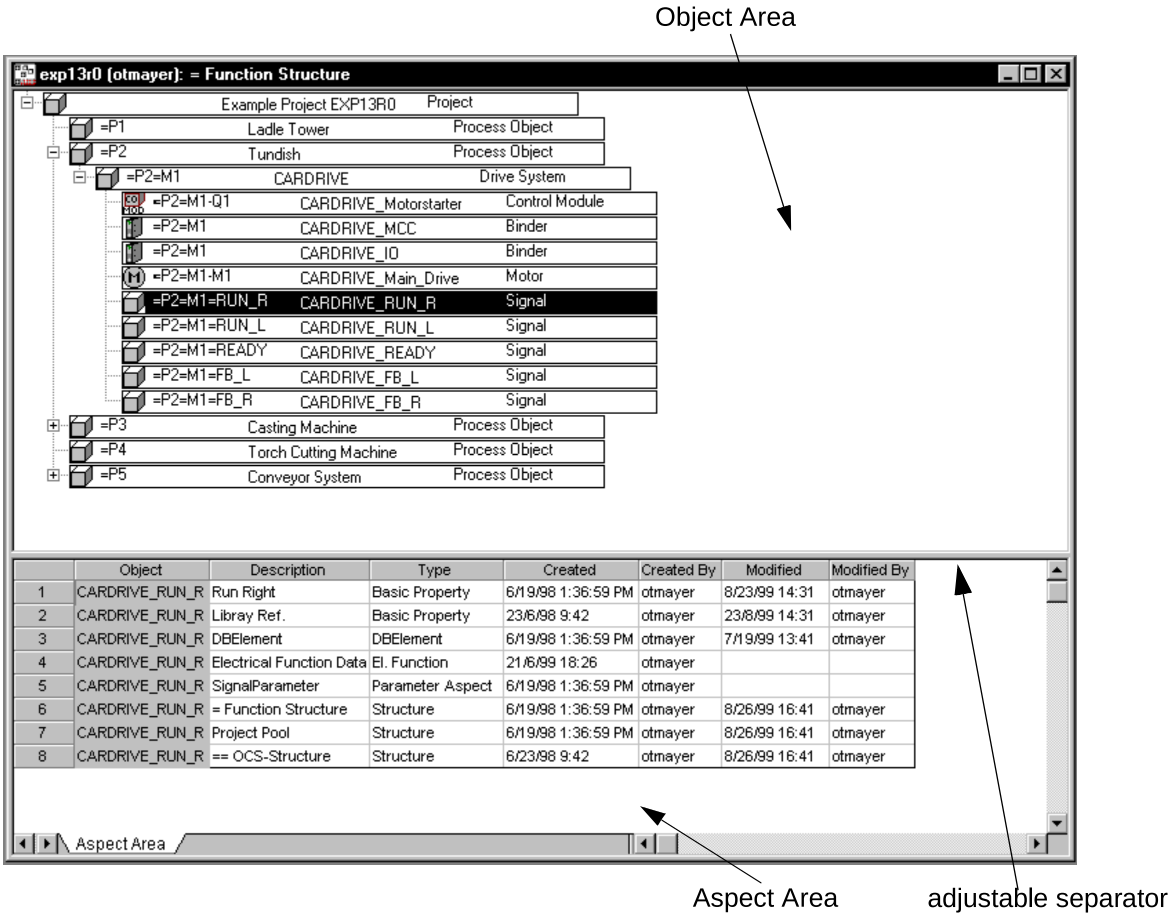
Project: exp13r0

Structure:

- Product Structure
& Plant Documentation Structue
+ Mounting Location Structure
++ Location Structure
= Function Structure
== OCS-Structure
Library Structure
Project Pool

Figure 3-27. Open Structure Dialog

This dialog is explained in Section 3.6.5.1, Structure. When you click **OK**, the corresponding structure window(s) will be displayed.



exp13r0 (otmayer): = Function Structure

	Example Project EXP13R0	Project
=P1	Ladle Tower	Process Object
=P2	Tundish	Process Object
=P2=M1	CARDRIVE	Drive System
=P2=M1-Q1	CARDRIVE_Motorstarter	Control Module
=P2=M1	CARDRIVE_MCC	Binder
=P2=M1	CARDRIVE_IO	Binder
=P2=M1-M1	CARDRIVE_Main_Drive	Motor
=P2=M1=RUN_R	CARDRIVE_RUN_R	Signal
=P2=M1=RUN_L	CARDRIVE_RUN_L	Signal
=P2=M1=READY	CARDRIVE_READY	Signal
=P2=M1=FB_L	CARDRIVE_FB_L	Signal
=P2=M1=FB_R	CARDRIVE_FB_R	Signal
=P3	Casting Machine	Process Object
=P4	Torch Cutting Machine	Process Object
=P5	Conveyor System	Process Object

	Object	Description	Type	Created	Created By	Modified	Modified By
1	CARDRIVE_RUN_R	Run Right	Basic Property	6/19/98 1:36:59 PM	otmayer	8/23/99 14:31	otmayer
2	CARDRIVE_RUN_R	Libray Ref.	Basic Property	23/6/98 9:42	otmayer	23/8/99 14:31	otmayer
3	CARDRIVE_RUN_R	DBElement	DBElement	6/19/98 1:36:59 PM	otmayer	7/19/99 13:41	otmayer
4	CARDRIVE_RUN_R	Electrical Function Data	El. Function	21/6/99 18:26	otmayer		
5	CARDRIVE_RUN_R	SignalParameter	Parameter Aspect	6/19/98 1:36:59 PM	otmayer		
6	CARDRIVE_RUN_R	= Function Structure	Structure	6/19/98 1:36:59 PM	otmayer	8/26/99 16:41	otmayer
7	CARDRIVE_RUN_R	Project Pool	Structure	6/19/98 1:36:59 PM	otmayer	8/26/99 16:41	otmayer
8	CARDRIVE_RUN_R	== OCS-Structure	Structure	6/23/98 9:42	otmayer	8/26/99 16:41	otmayer

Figure 3-28. Structure Window

The structure window is split into two areas: an object area (upper part of Figure 3-28) and an aspect area (lower part of Figure 3-28). The object area shows a structural view of the Advant objects belonging to the selected structure. The aspect area shows all aspects of the Advant objects which are selected in the object area. How to work with the structure window is described in Section 3.5.5, How to Work with Structures.

As it is possible to work with several projects simultaneously and to keep several structure windows open, the title bar of each structure window lists the user name, the project name, and the structure name. In Figure 3-28 user name is `otmayer`, project name is `exp13r0`, and structure name is `=Function Structure`.

3.6.2.2 Close

Use the **Project | Close** command to close a project. Then the following dialog is displayed:

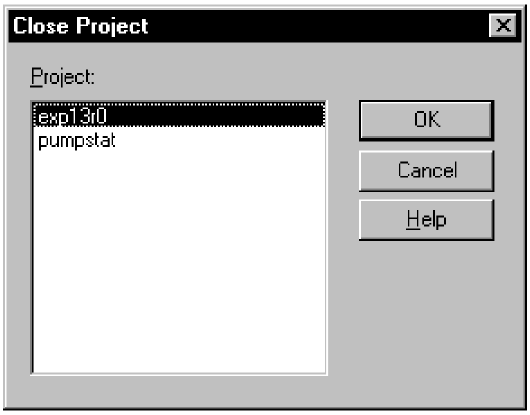


Figure 3-29. Close Project Dialog

From the Project list box select the project you want to close and click **OK**. You can select one project at a time. When you close a project, you will be logged off the database for that project. When you exit Structure Builder all open projects will be closed automatically.

3.6.2.3 Administration

Under Administration all features to administer projects, users, and user rights are put together. The administration task is normally assigned to a system administrator. Therefore, for security reasons, you have to log into the administration part with an administrator password.

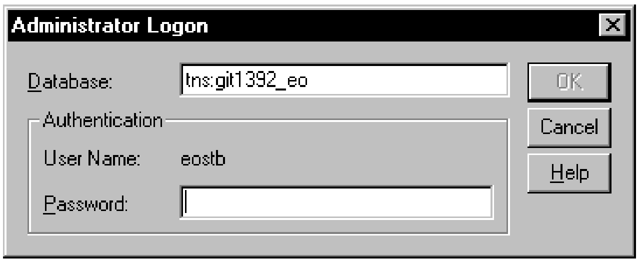
NOTE

It is recommended, that no others users are connected to the server database while the administrator is working.

Use the **Project | Administration** menu command to

- Administer users
- Administer projects and
- Assign users to projects.

Then at first the **Logon** dialog is displayed:



Database: tns:git1392_eo

User Name: eostb

Password:

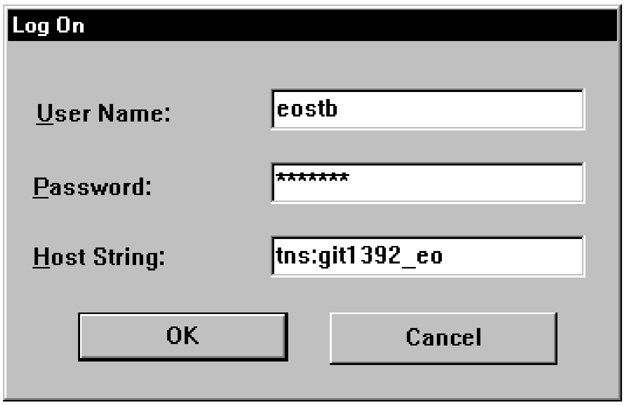
Figure 3-30. Administrator Logon Dialog

Enter the connect string for the database you want to administer and enter your administrator password. The user name is predefined and cannot be changed.

You can change the administrator password in the following way:

1. Via the Windows NT **Start** folder select **Programs / Oracle for Windows NT / SQL Plus**

   The following dialog will be displayed:



User Name: eostb

Password: *******

Host String: tns:git1392_eo

Figure 3-31. Logon Dialog for SQL Plus

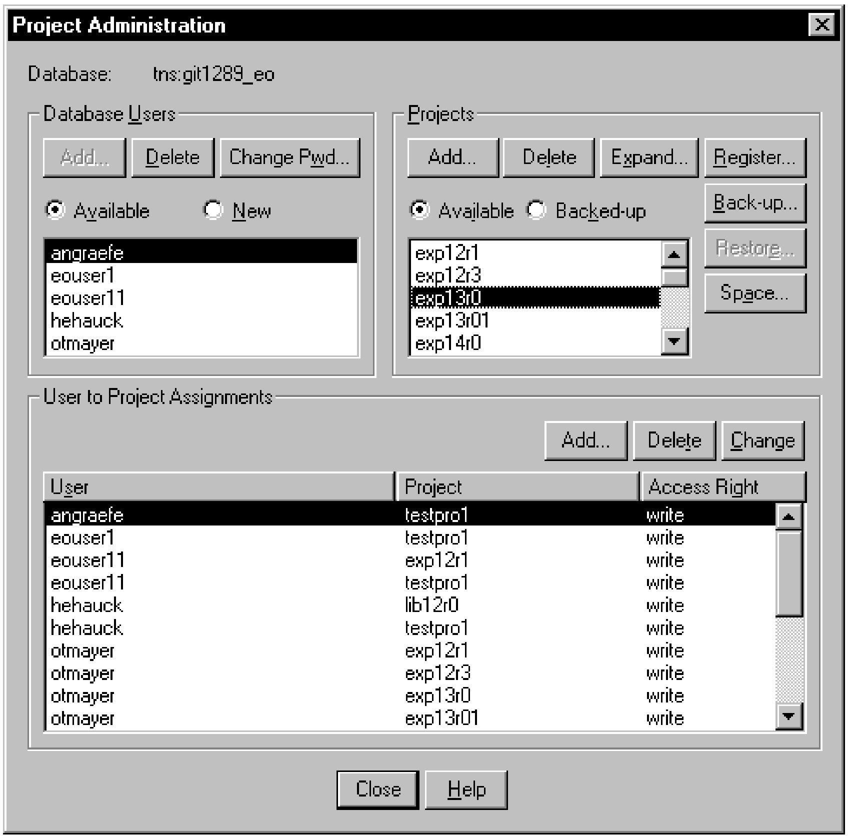
   Enter the name of the database (User Name: `eostb`), the password, and the connect string to your database.

2. The **SQL Plus** window will be displayed. At the **SQL>** prompt enter the following line:

```
alter user eostb identified by <new_password>;<ENTER>
exit<ENTER>
```

Now the new password is valid.

After completing the logon process the **Project Administration** dialog will be displayed:



Database: tns:git1289_eo

Database Users: ● Available ○ New

- angraefe
- eouser1
- eouser11
- hehauck
- otmayer

Projects: ● Available ○ Backed-up

- exp12r1
- exp12r3
- exp13r0
- exp13r01
- exp14r0

User	Project	Access Right
angraefe	testpro1	write
eouser1	testpro1	write
eouser11	exp12r1	write
eouser11	testpro1	write
hehauck	lib12r0	write
hehauck	testpro1	write
otmayer	exp12r1	write
otmayer	exp12r3	write
otmayer	exp13r0	write
otmayer	exp13r01	write

Figure 3-32. Project Administration Dialog

The dialog is separated into three areas: **Users**, **Projects**, and **User to Project Assignments**.

At the top of the dialog the database connect string of the database, you are currently connected to, is shown. One database connection at a time is possible, only.

When opening the dialog, the users that are already assigned to the database are listed. These users can be assigned in a further step to different projects of that database. When you want to add a certain user to the database, click the **New** button. The **Users** list box displays now all users that are members of the Windows NT group **AdvaBuild_engineers**, that are not mapped to this database.

Additionally you can delete a user from the database and change the password of a certain user. If you delete a user, he/she will implicitly be deleted from all projects within the database, he/she was assigned to.

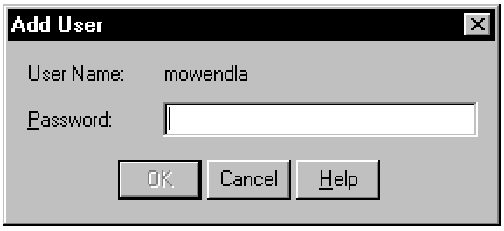
The **Projects** area shows the projects that are stored in the database you are connected to. You can

- Add a new project
- Delete an existing project from the database (while the **Available** button is selected)
- Delete an backed-up project from the file system (while the **Backed-up** button is selected)
- Expand the size of a database
- Register new Builders
- Back-up whole projects
- Restore whole projects
- Display a summary of the space, that is used by the projects of the database.

The **User to Project Assignments** area lists the projects and the access rights mapped to a certain user. The list can be sorted according to users, projects, or access rights by clicking in the corresponding part of the title of the list

Users Area Controls

Add
The **Add** button is only active if the **New** button is selected. Then all users, that are known by the system, but not mapped to the database you are connected to, are listed. Click **Add** to add a selected user to the database. Afterwards this user will be listed in the list box when the **Available** button is selected. After clicking **Add** the following dialog will be displayed:



User Name: mowendla

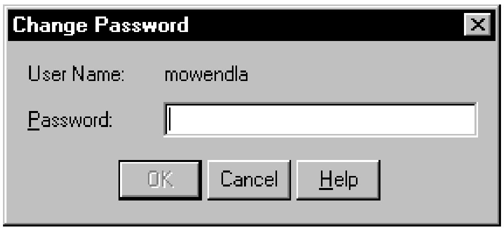
Password:

Figure 3-33. Add User Dialog

Enter a password for the selected user. This password the user will need when he/she wants to log into a project.

Delete
Click **Delete** if you want to delete selected users from the current database. No user password is required.

Change Pwd
Click **Change Pwd** to change the password of a selected user. Then the following dialog is displayed:



User Name: mowendla

Password:

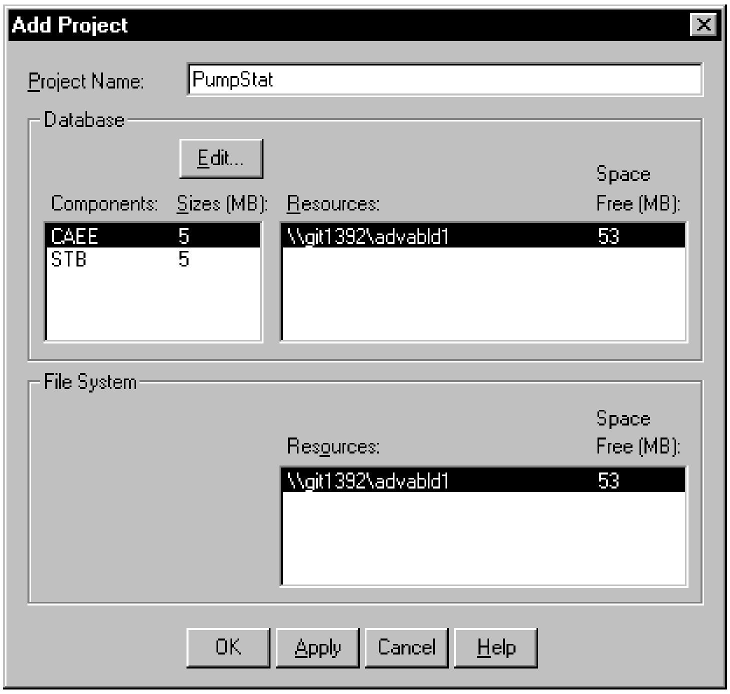
Figure 3-34. Change Password Dialog

Enter a password for the selected user and click **OK**.

Projects Area Controls

Add

The **Add** button is only active if the **Available** button is selected. Then all projects of the database are listed. Click **Add** to create a new project. Then the following dialog is displayed:



Project Name: PumpStat

Database

Components:	Sizes (MB):
CAEE	5
STB	5

Resources:	Space Free (MB):
\\git1392\advabld1	53

File System

Resources:	Space Free (MB):
\\git1392\advabld1	53

Figure 3-35. Add Projects Dialog

The project's data are stored in a database and in the file system. While you can store data in files as long as the hard disk is not completely full, you have to specify for the database, how much space it shall reserve for your projects.

The different Builders of the AdvaBuild Engineering Software use two different **Oracle** databases. One is referred to as **CAEE** database, which holds data of the electrical CAD tools of the selected project. The other is referred to as **STB** database which holds the data of **Structure Builder** of the selected project.

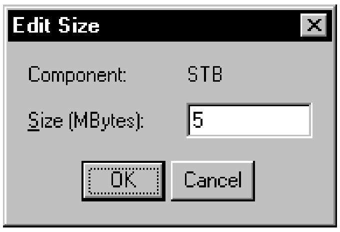
In the **database** area you can specify the hard disk space used for both databases.

Dialog Controls of Add Projects Dialog

Project Name
Enter a valid project name. A project name may consist of maximal eight characters. The first character has to be a letter, followed by seven alphanumeric characters. The only allowed special character is the underscore ('_').

Database

Sizes
The initial size of the databases of the selected project is displayed in MBytes. Click **Edit** or double-click the line to modify the size. Then the following dialog will be displayed:



Component: STB

Size (MBytes): 5

Figure 3-36. Edit Size Dialog

Enter the new size and click **OK**.

Resources
Under **Resources** the share name of the directory where the project data are stored is displayed.

Space Free
The free memory on the hard disk is listed.

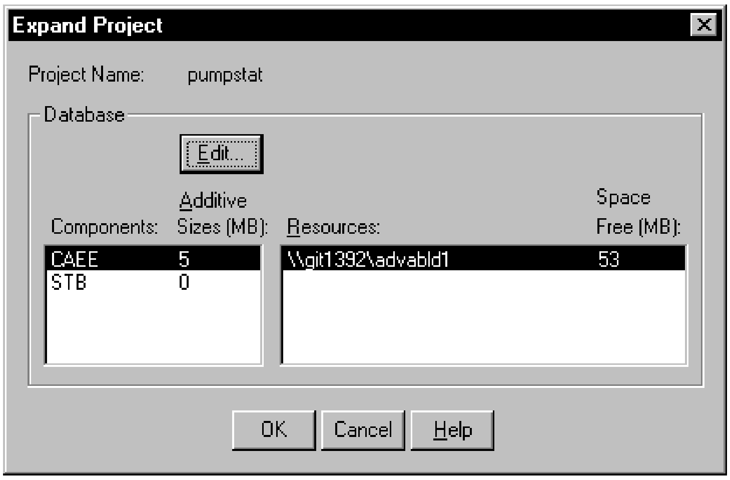
File System

Resources
Under **Resources** the share name of the directory where the project data are stored is displayed.

Space Free
The free memory on the hard disk is listed.

Delete
Click **Delete** to delete the selected projects.

Expand
Click **Expand** if you want to expand the size of a project in the database. Oracle will add another segment to its internal storage. When you click **Expand** the following dialog will be displayed:



Project Name: pumpstat

Components:	Additive Sizes (MB):
CAEE	5
STB	0

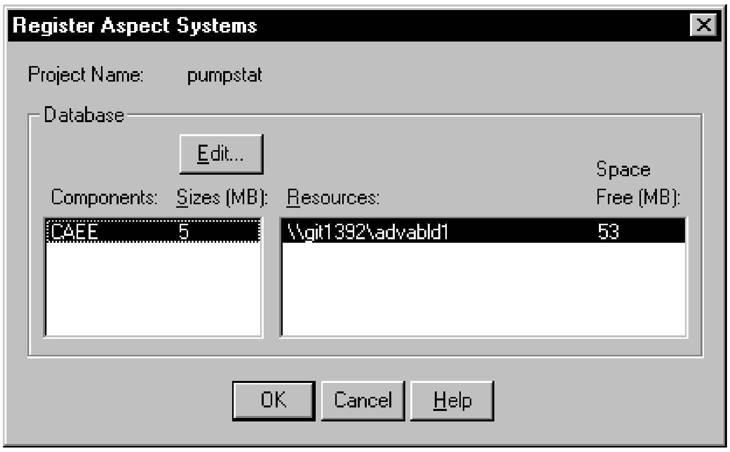
Resources:	Space Free (MB):
\\git1392\advabld1	53

Figure 3-37. Expand Project Dialog

If you click **OK** then in the example of Figure 3-37 a new segment of 5 MBytes will be added for the **CAEE** database and nothing for the **STB** database. If you want to use other sizes for the added segments, select the database and click **Edit** or double-click the line. In the **Edit** dialog you can specify the actual size of the segment that shall be added.

When the dialog pops up, **Additive Sizes** are set to 0 MBytes. Zero means that no additive segment will be added to the project's database.

Register
If you have started your project with only some of the Builders installed and want to add other Builders later on, then the system must be informed about these new Builders. Select the project concerned and click **Register** if you have new Builders installed to integrate them into the project environment. Then the following dialog is displayed:



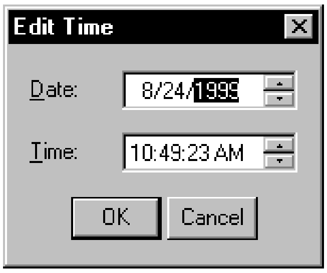
Project Name: pumpstat

Components:	Sizes (MB):	Resources:	Space Free (MB):
CAEE	5	\\git1392\advabld1	53

Figure 3-38. Register Aspect System Dialog

If the CAEE database was not used up to now and a new builder was installed which will use this database, then the project of this database will be created with the shown size. You can modify this value when you click **Edit** or double-click the line.

Back-up
Click **Back-up** if you want to back-up all data of the selected projects. Then the following dialog will be displayed:



Date: 8/24/1999

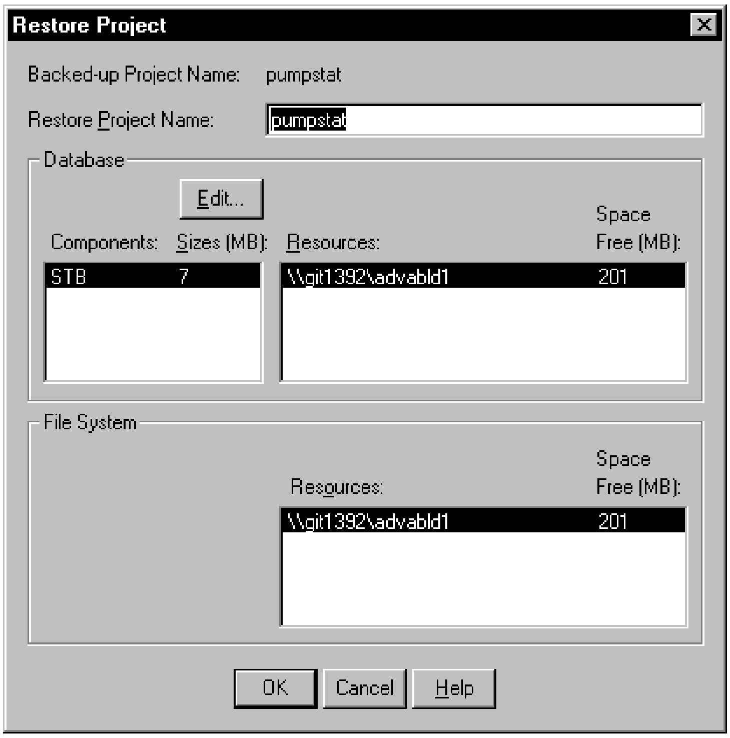
Time: 10:49:23 AM

Figure 3-39. Edit Time Dialog

Enter a new date and time if you want to back-up the selected projects at a special time and click **OK**. When the entered time is reached the back-up will be started and the data will be copied to the **Eobackup** folder below **Advabld1**.

Restore
You can restore a project that was previously backed-up. To visualize the projects that can be restored, click the **Backed-up** button in the **Projects** area of the **Project Administration** dialog (see Figure 3-32).

Select the project you want to restore and click **Restore**. Then the following dialog is displayed:



Backed-up Project Name: pumpstat

Restore Project Name: pumpstat

Components:	Sizes (MB):	Resources:	Space Free (MB):
STB	7	\\git1392\advabld1	201

Resources:	Space Free (MB):
\\git1392\advabld1	201

Figure 3-40. Restore Project Dialog

Dialog Controls

Restore Project Name
The default name is the name of the backed-up project. You can overwrite this name.

Database

Sizes
The displayed sizes will be used for creation of the project's segments in the database. Click **Edit** or double-click the line if you want to specify other sizes.

The default size of a certain database reflects the used space of the project concerned before it was backed-up. If you modify this size it must be equal or greater than the shown size.

Components
The project's databases are listed with their used size.

Resources
Under **Resources** the share name of the directory where the project data are stored is displayed.

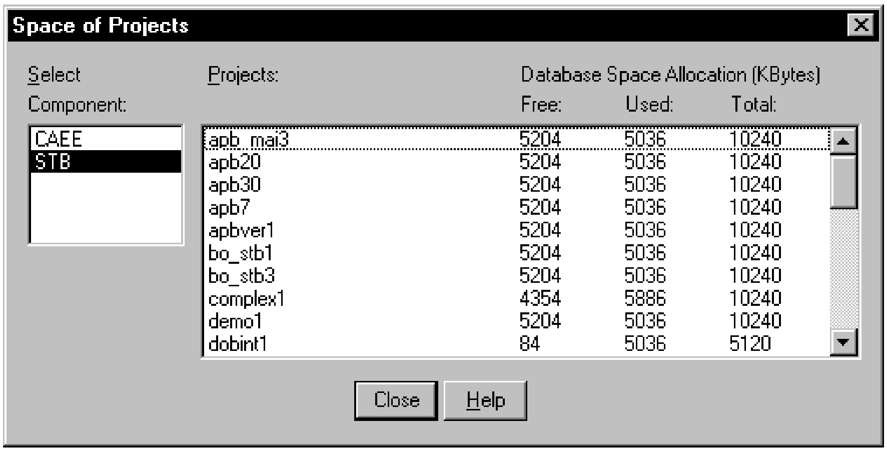
Space Free
The free space on the hard disk is listed.

File System

Resources
Under **Resources** the share name of the directory where the project data are stored is displayed.

Space Free
The free space on the hard disk is listed.

Space



Projects:	Database Space Allocation (KBytes) Free:	Used:	Total:
apb_mai3	5204	5036	10240
apb20	5204	5036	10240
apb30	5204	5036	10240
apb7	5204	5036	10240
apbver1	5204	5036	10240
bo_stb1	5204	5036	10240
bo_stb3	5204	5036	10240
complex1	4354	5886	10240
demo1	5204	5036	10240
dobint1	84	5036	5120

Figure 3-41. Hard Disk Space Used by Projects

Click **Space** to get a listing of the space consumed by all projects of a certain database. Select the database from the **Select Component** field. The listing includes information about the free, the used and the total reserved space in MBytes.

User to Project Assignments Area Controls

Add

Click the **Add** button to open the dialog shown in Figure 3-42.

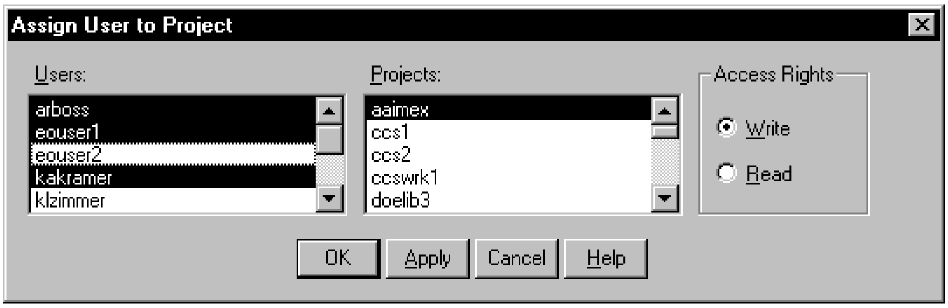


Figure 3-42. Assign Users to Projects Dialog

If you want to assign certain users to a certain project, select them in the **Users** or **Projects** column, specify the access right, and click **OK** or **Apply**.

Delete

Select the assignments in the **User to Project Assignments** list and click **Delete**.

Change

You can change the access right from read to write and vice versa. Select the assignments in the **User to Project Assignments** list you want to change and click **Change**.

3.6.2.4 Upgrade

Use the **Project | Upgrade** menu command to upgrade the Structure Builder specific project data from an older version of Structure Builder to the current one you are using.

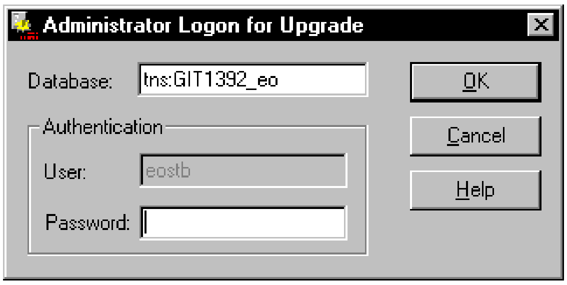
NOTE

This command will upgrade the Structure Builder specific data only. See the documentation of other builders you are using within your projects for information about how to upgrade project data.

NOTE

Upgrade of project data is not necessary from Structure Builder version 3.1 to version 3.2

When you select the **Project | Upgrade** menu command, the dialog shown in Figure 3-43 is displayed:



Database: tns:GIT1392_eo

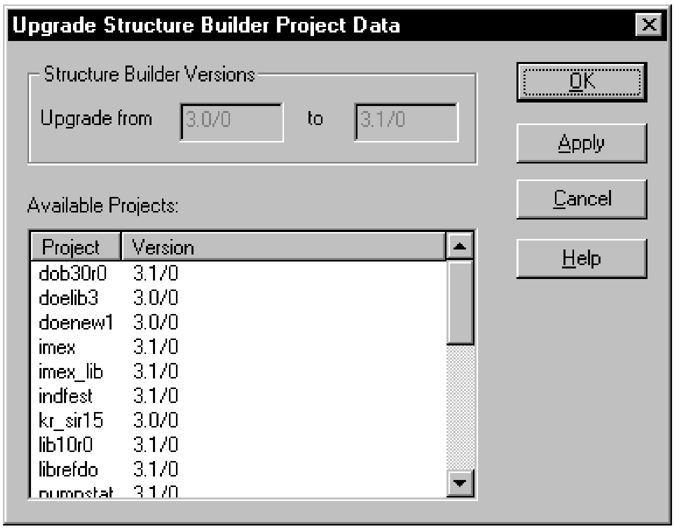
User: eostb

Password:

Figure 3-43. Upgrade Dialog

Upgrading is meant as a task to be performed by the database administrator. You have to log in to the database as user **eostb**. This field is grayed, as there is only one user with this name possible.

Type the database connect string and your administrator password into the corresponding fields and click **OK**. Then the following dialog is displayed:


Upgrade Structure Builder Project Data
Structure Builder Versions
OK
Apply
Cancel
Help

Upgrade from 3.0/0 to 3.1/0

Available Projects:

Project	Version
dob30r0	3.1/0
doelib3	3.0/0
doenew1	3.0/0
imex	3.1/0
imex_lib	3.1/0
indtest	3.1/0
kr_sir15	3.0/0
lib10r0	3.1/0
librefdo	3.1/0
pumpstat	3.1/0

Figure 3-44. Projects Available for Upgrade

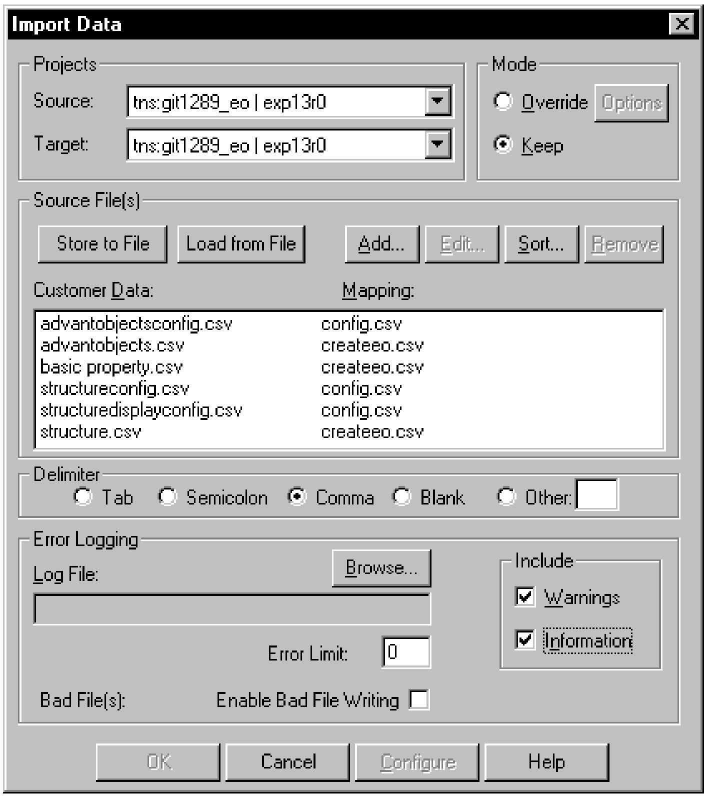
The upgrade path is shown in the upper part of the dialog. In the example shown in Figure 3-44 the offered upgrade works on project data created with Structure Builder of version 3.0/0, which will be upgraded to version 3.1/0. You can inspect the version of your Structure Builder with the **Help | About Structure Builder** menu command (see Section 3.6.6.5, About Structure Builder).

In the lower part of the dialog the available projects and the corresponding Structure Builder version are displayed in a list box. You can select multiple projects in the list box. Projects that are already upgraded, cannot be selected. Click **OK** when you have selected the projects you want to upgrade.

3.6.2.5 Import

Use the **Project | Import** menu command to import objects and object aspects. When you perform an import from files generated via the **Project | Export** command make sure to import the configuration data first.

When you select the **Project | Import** menu command the following dialog is displayed:



Source: tns:git1289_eo | exp13r0

Target: tns:git1289_eo | exp13r0

○ Override ● Keep

Customer Data:	Mapping:
advantobjectsconfig.csv	config.csv
advantobjects.csv	createeo.csv
basic property.csv	createeo.csv
structureconfig.csv	config.csv
structuredisplayconfig.csv	config.csv
structure.csv	createeo.csv

○ Tab ○ Semicolon ● Comma ○ Blank ○ Other:

Log File:

Error Limit: 0

☑ Warnings

☑ Information

Enable Bad File Writing ☐

Figure 3-45. Import Objects Dialog

For more information about **Import** see *Bulk Data Handling and Reuse Reference Manual*.

3.6.2.6 Export

Use the **Project | Export** menu command to export object data and object aspect data:

If any object in the active structure window is selected, then each selected object will be exported. If no object in the active structure window is selected, then all objects of the project will be exported.

The following files generated by an export procedure are related to the Structure Builder:

AdvantObjects.csv, BasicProperty.csv, Structure.csv.

Additionally you can also export the following object configuration data:

- Object type definitions
- Structure window definitions
- Structure window display settings.

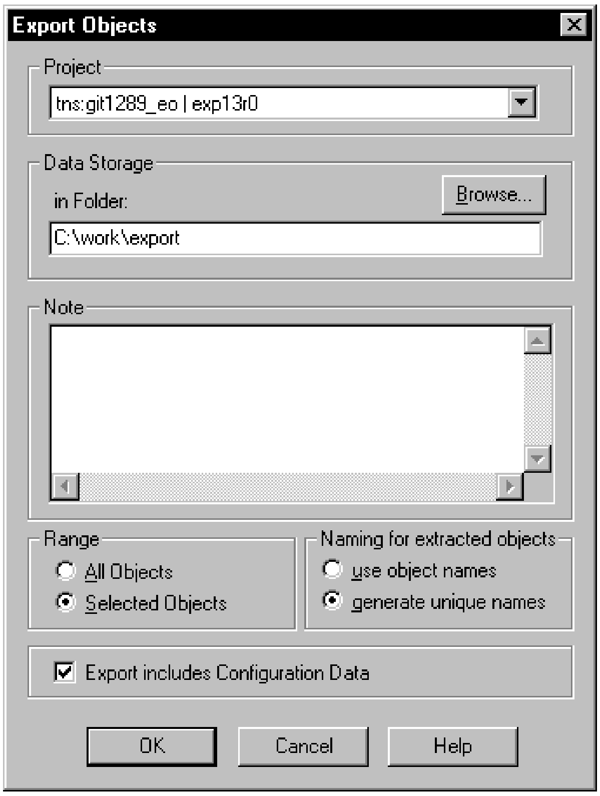
These object configuration data are project specific. Other settings in the Structure Builder, for example in the aspect area are client specific and will not be exported.

The following files will be generated for configuration data:

AdvantObjectsConfig.csv, StructureConfig.csv, StructureDisplayConfig.csv.

Data are exported in comma separated values format. Data stored in this format can easily be read by tools like Microsoft Excel as well as by the **Project | Import** menu command (see also Section 3.6.2.5, Import).

When you select the **Project | Export** menu command the following dialog is displayed:



Export Objects

Project: tns:git1289_eo | exp13r0

Data Storage
in Folder: C:\work\export

Range
○ All Objects
● Selected Objects

Naming for extracted objects
○ use object names
● generate unique names

☑ Export includes Configuration Data

Figure 3-46. Export Objects Dialog

For more information about **Export** see *Bulk Data Handling and Reuse Reference Manual*.

3.6.2.7 Recent Project List

Under this menu item some of the projects you have previously opened, are listed. Click on one of the projects to open it again. In the login dialog, that will be displayed, you have to fill in your password, only.

The string **Recent Project List** will only be shown the first time you open Structure Builder. Afterwards the string will be replaced by a project name.

3.6.2.8 Exit

Use the **Project | Exit** menu command to exit Structure Builder. This command closes all your open projects implicitly. The log off process from the database will also be performed.

3.6.3 View Menu

3.6.3.1 Toolbar

Use the **View | Toolbar** menu command to display or hide the toolbar, which includes buttons for some of the most common menu commands in Structure Builder, such as **Objects | New**. A check mark appears next to the menu item when the toolbar is displayed.

Toolbar

The toolbar is displayed across the top of the application window, below the menu bar. You can pick it up with the mouse and drag it to any position on the screen you like. If you want to put it back to its original position, drag it just below the Structure Builder's title window. Then it will snap into its home position.

The toolbar provides quick mouse access to many menu commands used in Structure Builder.

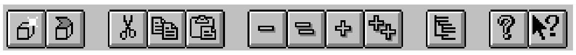


Figure 3-47. Toolbar

Toolbar buttons exist for the following menu commands:

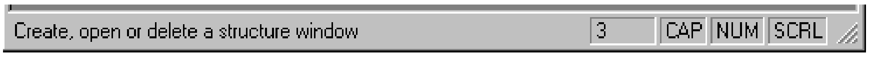
- **Object | New**
- **Open | Objects**
- **Edit | Cut**
- **Edit | Copy**
- **Edit | Paste**
- **View | Compress**
- **View | Compress Subtree**

- **View | Expand**
- **View | Expand Subtree**
- **Window | Open Structure**
- **Help | Contents**
- **Help | On Context**.

3.6.3.2 Status Bar

Use the **View | Status Bar** menu command (always active) to display and hide the status bar, which describes the action to be executed by the selected menu item or depressed toolbar button, and keyboard latch state. A check mark appears next to the menu item when the status bar is displayed.

The status bar is displayed at the bottom of the Structure Builder window



Create, open or delete a structure window

Figure 3-48. Status Bar

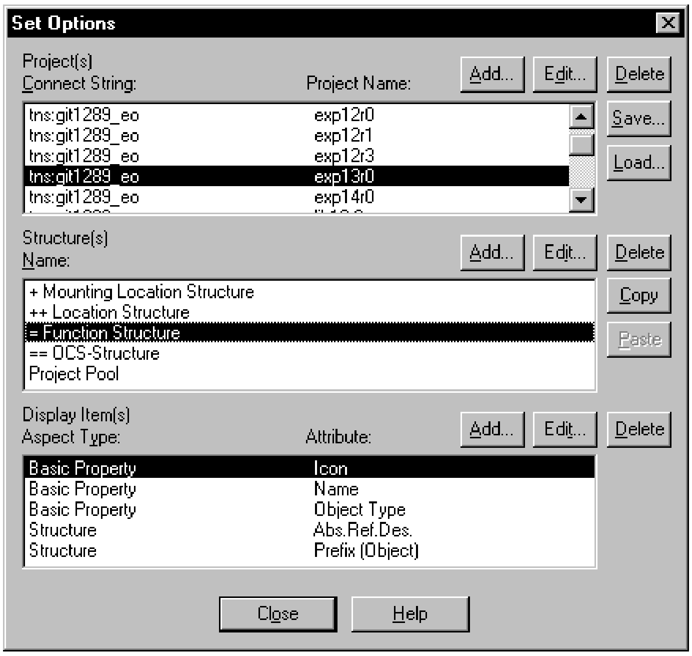
In the leftmost area of the status bar help texts for menu items and toolbar buttons are displayed. If you decide after viewing the description of the toolbar button or menu command not to execute this command, then release the mouse button while the pointer is off the toolbar button's or menu command's area.

In the right area of the status bar the number of objects selected in the active structure window and some keyboard settings are displayed.

3.6.4 Options Menu

3.6.4.1 Project

Use the **Options | Project** menu command to customize projects, structure, and display characteristics according to your personal wishes. Then the following dialog is displayed:



Connect String:	Project Name:
tns:git1289_eo	exp12r0
tns:git1289_eo	exp12r1
tns:git1289_eo	exp12r3
tns:git1289_eo	exp13r0
tns:git1289_eo	exp14r0

Name:

+ Mounting Location Structure
++ Location Structure
= Function Structure
== OCS-Structure
Project Pool

Aspect Type:	Attribute:
Basic Property	Icon
Basic Property	Name
Basic Property	Object Type
Structure	Abs.Ref.Des.
Structure	Prefix (Object)

Figure 3-49. Set Options Dialog

The **Set Options** dialog is split into three areas:

- Project
- Structure
- Display Item.

Your settings will be stored on your computer. That means that a person, working with the same projects on another computer, may use quite different settings.

Project Area

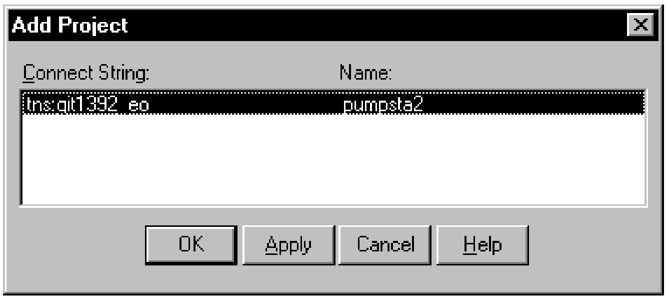
In the project list box all projects for which you have option handling defined are listed. As this information is stored on your client PC, it cannot be guaranteed, that this information is still valid. It may be that a certain project was deleted from another client PC.

Select the project you want to refine the option handling for.

To remove an entry from this list box, use the **Delete** button.

Project Area Controls

Add
Click **Add** if you want to add a project to option handling. Then the following dialog is displayed:



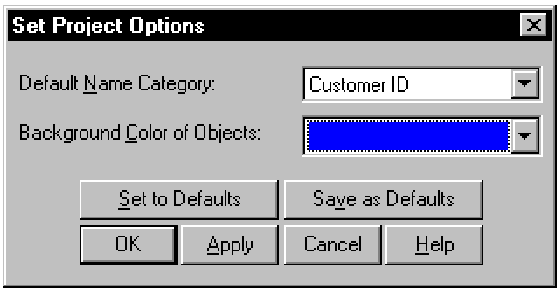
Connect String:	Name:
tns:qit1392_eo	pumpsta2

Figure 3-50. Options - Add Project Dialog

The dialog lists the currently open projects, for which option handling is not yet activated.

Edit

Click **Edit** if you want to set certain project default settings used when Advant objects and aspect will be created. Then the following dialog is displayed:



Default Name Category: Customer ID

Figure 3-51. Options - Set Project Options Dialog

Dialog Controls

Default Name Category
Select the name category from the list box that shall automatically be inserted into the Basic Property aspect when an Advant object will be created. This category will also be displayed in the Advant object’s rectangle.

Background Color of Objects
Select a background color from the list box.

Delete

Click Delete if you want to delete a project from the project list box. Deleting a project within the Options dialog does not mean, that the project will be deleted, but that it is no further available for setting of options. For projects not listed under **Project**, default values will be used.

Save

Click Save if you want to extract the selected project display set from the eostb.ini file to a separate file.

Load

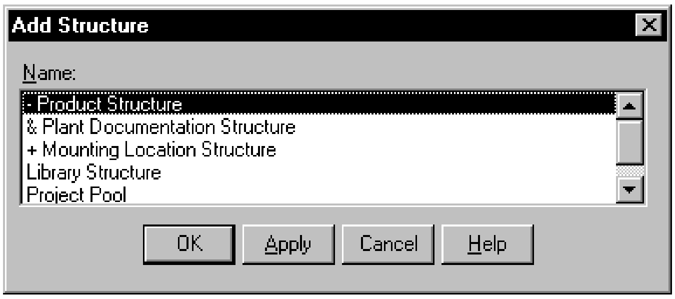
Click Load if you want to add the additional project display sets to the existing eostb.ini file. Existing project display sets for structures will not be overwritten. To be sure to get all the saved display sets for the current project, first remove all the structure display sets.

Structure Area

In the Structure Area you can select a structure and define its appearance.

Structure Area Controls

Add
Click **Add** to activate a structure for option handling. Then the following dialog is displayed:



Name:

- Product Structure
& Plant Documentation Structure
+ Mounting Location Structure
Library Structure
Project Pool

Figure 3-52. Options - Add Structure Dialog

Select a structure from the list box.

Edit

Click Edit to specify some display attributes of an Advant object. Then the following dialog is displayed:

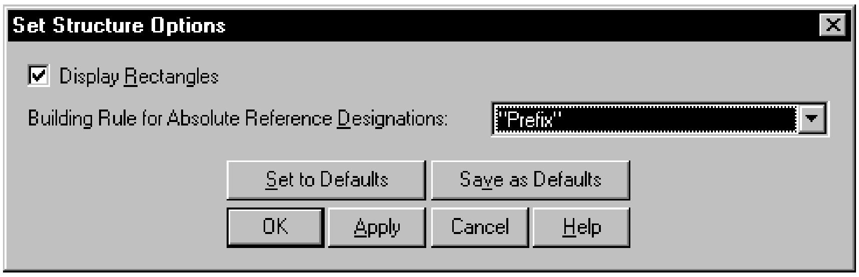


Figure 3-53. Options - Set Structure Options Dialog

Dialog Controls

Display Rectangles
Check the check box if you want the Advant objects displayed with a thin black outlining rectangle.

Building Rule for Absolute Reference Designations
Two types of reference designations can be distinguished: relative and absolute ones. A relative reference designation can be assigned to a certain Advant object. The absolute reference designation of an Advant object is built by concatenating the absolute reference designation of the parent object with the relative reference designation of the Advant object under consideration. The way the concatenation is performed, can be controlled by building rules. Separators may be inserted in between the designations for a better visualization.

If for example an Advant object "Signal A" has a relative reference designation A2 and its parent object an absolute reference designation =A1, then the absolute reference designation of Signal A is =A1.A2, if a dot is used as separator.

Each relative reference designation may have a prefix. The prefix specifies the type of the reference designation. In the absolute reference designation of the parent object in the above mentioned example, '=' is the prefix. The prefix may also be used as separator. Whether a separator is used or not and the type of separator is controlled via the building rules.

Available building rules are:

- None
- Prefix
- Dot
- Prefix to Dot.

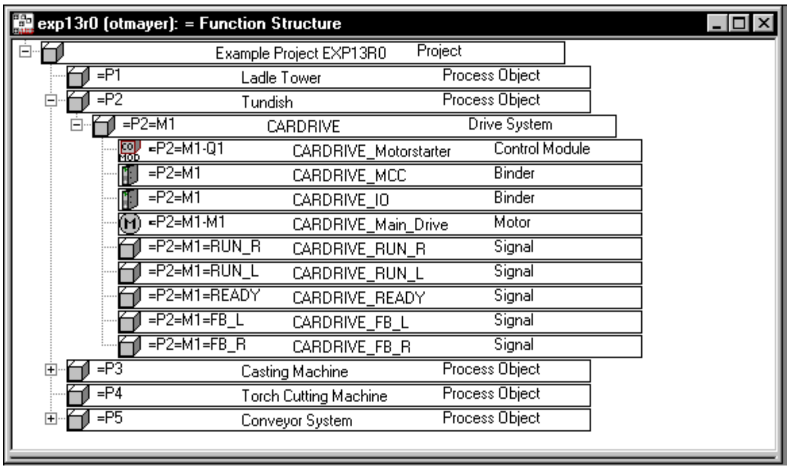
The **None** rule has the following meaning: relative reference designations are concatenated to build the absolute reference designation without using a separator in between. But when the type of the reference designation changes, the prefix is used as separator.

If you select the **Prefix** rule, the prefix is used as separator between relative reference designations. When no prefix is defined for a certain relative reference designation, no separator will be inserted.

If you select **Dot** rule, the dot is always used as separator between relative reference designations, except at positions, where the type of the designation changes. Here the prefix is used as separator.

The **Prefix to Dot** rule has the following meaning: For relative reference designations with defined prefix, a dot will be shown instead of the prefix, unless the for cases, where the type changes. In this cases the prefix will be shown as usual.

In Figure 3-54 an example is shown for the building rule **Prefix**. The absolute reference designations are shown on the object displays. The absolute reference designations are built by concatenating the relative reference designations using the prefix as separator. If you choose building rule **Dot** the prefix will only be displayed, when the type of the designation changes. The reference designation of CARDRIVE_Motorstarter would be like this: =P1.M1-Q1.



	Example Project EXP13R0	Project
=P1	Ladle Tower	Process Object
=P2	Tundish	Process Object
=P2=M1	CARDRIVE	Drive System
=P2=M1-Q1	CARDRIVE_Motorstarter	Control Module
=P2=M1	CARDRIVE_MCC	Binder
=P2=M1	CARDRIVE_IO	Binder
=P2=M1-M1	CARDRIVE_Main_Drive	Motor
=P2=M1=RUN_R	CARDRIVE_RUN_R	Signal
=P2=M1=RUN_L	CARDRIVE_RUN_L	Signal
=P2=M1=READY	CARDRIVE_READY	Signal
=P2=M1=FB_L	CARDRIVE_FB_L	Signal
=P2=M1=FB_R	CARDRIVE_FB_R	Signal
=P3	Casting Machine	Process Object
=P4	Torch Cutting Machine	Process Object
=P5	Conveyor System	Process Object

Figure 3-54. Example of Reference Designation Display

Delete
Click **Delete** if you want to delete a structure from the list box. Deleting a structure within the Options dialog does not mean to delete a structure, but that it is no further available for option handling.

Copy

Click Copy to take the selected structure display set to a Structure Builder internal paste buffer.

Paste

Click Paste to read the Structure Builder internal paste buffer and to overwrite the selected structure display set with the paste buffer content.

Display Item Area

In the Display Item area you can specify which attributes of aspect types will be displayed and how they will look like. Further on you can select a font.

Display Item Area Controls

Add
Click **Add** if you want to a certain attribute of an aspect type to the option handling. Then the following dialog is displayed:

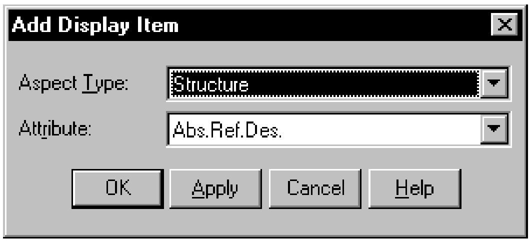
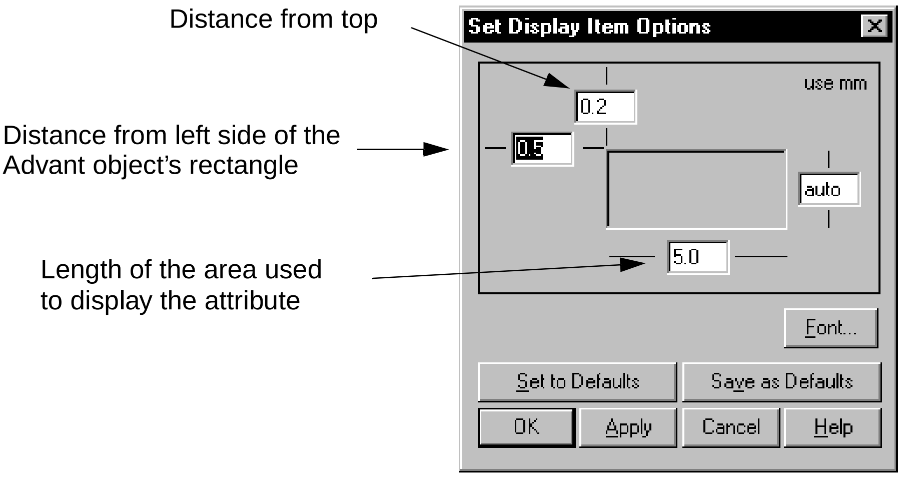

Aspect Type: Structure
Attribute: Abs.Ref.Des.

Figure 3-55. Options - Add Display Items Dialog

Select an aspect type and the corresponding attribute from the list boxes. This attribute will be added to the display of an Advant object.

Edit
Click **Edit** to determine the area that will be used for the display of an attribute. Then the following dialog is displayed:


Distance from top

Distance from left side of the
Advant object's rectangle

Length of the area used
to display the attribute

0.2
0.5
auto
5.0

Figure 3-56. Options - Set Display Item Options Dialog

Other Dialog Controls

Auto
Structure Builder will determine the optimum height of the area. But you can use your own values instead.

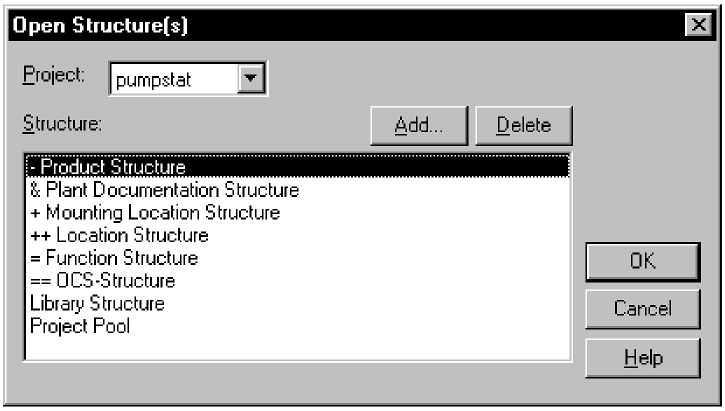
Font
Click **Font** to open a standard font selection dialog box.

Delete
Click Delete to delete a display item from the list box. Deleting a display item means, that it is no further available for option handling.

3.6.5 Window Menu

3.6.5.1 Structure

Use the **Window | Structure** menu command to open one or several structure windows, to add a new structure or to delete an existing one. Then the following dialog is displayed:



Project: pumpstat

- Product Structure
& Plant Documentation Structure
+ Mounting Location Structure
++ Location Structure
= Function Structure
== OCS-Structure
Library Structure
Project Pool

Figure 3-57. Open Structure Dialog

To open one or several structure windows, select the corresponding project at first and then the structures to be opened and click **Open**.

Shortcut

Toolbar button:

Dialog Controls

Project
Displays the currently opened projects. You can select one out of the list.

Add
You can add a new structure to the selected project. When you click **Add** the **Add Project Structure** dialog will be displayed (see Figure 3-58). To this new structure you can copy Advant objects later on.

Delete
You can select several structures from the structure list and delete them. Structures must be empty before you can delete them. Use the **Remove from Structure** menu command to make a structure empty (see Section 3.7.1.4, Remove From Structure).

Structure

Lists all available structures of the selected projects. You can select several structures. Click **OK** to open the structure windows.

Additional Dialogs

Add Project Structure dialog

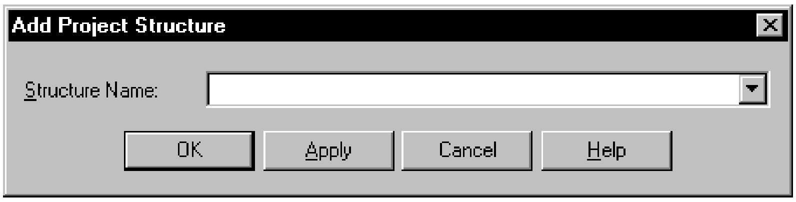


Figure 3-58. Add Project Structure Dialog

You can type in the name of a new structure you want to create. If you want to insert a name similar to one you have already used before, you can select the previous name from the list box and modify this name afterwards.

3.6.6 Help Menu

3.6.6.1 Contents

Use the **Help | Contents** menu command (always active) to display the opening screen of help. From the opening screen, you can jump to step-by-step instructions for using Structure Builder and various types of reference information.

Once you open help, you can click the **Contents** button whenever you want to return to the opening screen.

Shortcut

Toolbar button: ?

3.6.6.2 On Context

Use the **Help | On Context** menu command (always active) to obtain help on some portion of Structure Builder. When you choose the toolbar's **Context Help** button, the mouse pointer will change to an arrow and question mark. Then click somewhere in the Structure Builder window, such as another toolbar button. The help topic will be shown for the item you clicked.

Shortcuts

Toolbar button: ↖?

Keys: **Shift+F1**

3.6.6.3 How to Use Help

Use the **Help | How to Use Help** menu command for instructions about using help.

3.6.6.4 Release Notes

Use the **Help | Release Notes** menu command to open the release notes of the current version of Structure Builder.

3.6.6.5 About Structure Builder

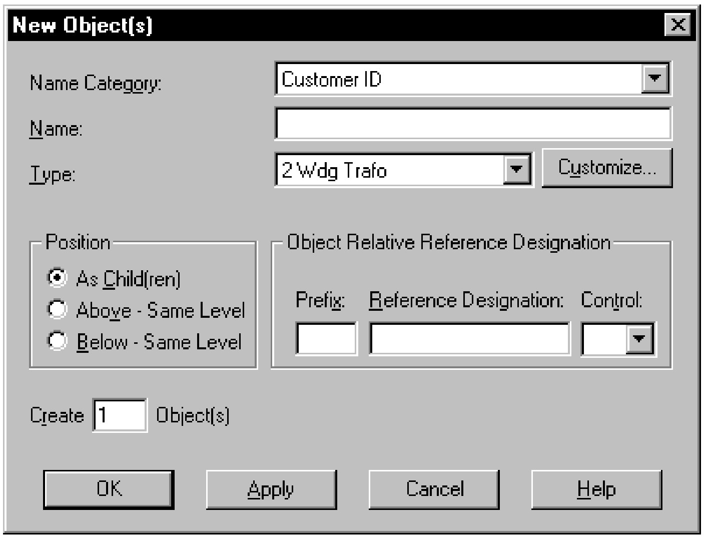
Use the **Help | About Structure Builder** menu command to display the copyright notice and version number of your copy of **Structure Builder**.

3.7 Configuration/Application Building Menus; Object Context

3.7.1 Object Menu

3.7.1.1 New

Use the **Object | New** menu command to create a new Advant object. Then the following dialog is displayed:



Name Category: Customer ID

Name:

Type: 2 Wdg Trafo

Position
● As Child(ren)
○ Above - Same Level
○ Below - Same Level

Create 1 Object(s)

Figure 3-59. New Object Dialog

To create a new Advant object select a category from the list box, type in a name for the new object and select the Advant object type from the list box. With the radio buttons you can specify where in the structure hierarchy – relatively to the selected parent object – the new element shall be inserted.

Shortcut

Toolbar button:

Dialog Controls

Name Category
Select a name category from the category list box. An aspect type may have several categories as subtypes. The name of the Advant object will be stored in a basic property aspect of the selected category. Several categories are supplied by Structure Builder:

- Customer ID
- Document ID
- Function ID
- Instance ID
- Instrumentation ID
- Location ID
- Mechanical ID
- Process ID
- Product ID
- Reference ID.

Name
Enter a valid name for the Advant object you want to create.

Type
Select a type for the Advant object. Several types are supplied by Structure Builder.

Customize Object Types

See Section 3.7.5.1, Customize Object Types.

Position

As Child(ren)
Select **As Child(ren)** when you want to insert the new Advant object as child relatively to the selected Advant object.

Above - Same Level
Select as **Above - Same Level** when you want to insert the new Advant object as sibling above the selected Advant object.

Below - Same Level
Select as **Below - Same Level** when you want to insert the new Advant object as sibling below the selected Advant object.

Object Relative Reference Designation

You can specify – just when you create the Advant object – the relative reference designation the object will obtain in the active structure. As relative designations will be concatenated to absolute ones, this may not be very useful, when the active window is a pool window, because of the missing hierarchy of Advant objects within the pool. For more information about relative reference designations see Section 3.5.9.10, Inserting Reference Designations, Figure 3-86, and Appendix B, Glossary of Terms, page B-5.

Create Objects
If you want to create more than one Advant object of the specified type, enter the number of objects. This may be meaningful if you want to create a lot of Advant objects that differ only slightly. After creation you may modify individual Advant objects.

If digits are at the end of the name, these numerals will be incremented for each of the objects created within a series. If you want to create three objects Motor1, you will get Motor1, Motor 2, and Motor3. The same works for Motor001.

Blanks at the beginning or at the end of the object name will be removed.

Naming Conventions

From Structure Builder's point of view you are free to insert any 8-bit national character. But some other Builders use the text for special purposes.

If you are going to use Function Chart Builder or On-line Builder, you should be aware of the following restrictions:

The **Name** attribute of an object's **Basic Property** aspect (category **Customer ID**) has to follow

- The DB name syntax if the object covers
  - DBElement aspects, and/or
  - Circuits aspects only instantiating DB type circuits.
- The PC name syntax if the object covers only
  Circuit aspects only instantiating PC type circuits.
- The common subset of PC and DB name syntax if the object covers only
  - Circuit aspects instantiating both, DB and PC type circuits, or
  - DBElement aspects together with at least one Circuit aspect instantiating a PC type circuit.

The Description attribute of a DBElement aspect has to follow the DB name syntax.

The Description attribute of a Circuit aspect has to follow

- The DB name syntax, if the circuit only instantiates DB type circuits,
- The PC name syntax, if the circuit only instantiates PC type circuits,
- The common subset of DB and PC name syntax, if the circuit instantiates both, DB and PC type circuits.

Syntax Rules for DB Element Names

Rules:

- Names must not consist only of numerals, or periods, or numerals and periods (dots).
- Names must not start or end with a hyphen.
- Names must not be equal to an item designation, for example AI1.1, unless it is its own item designation.
- Substrings of names must not equal "**.B**n", "**.I**n", "**.IL**n", "**.R**n", where n is a number, except for names of DAT elements.

Table 3-5. Allowed Characters - DB Element Names

Name of Character	**Printed Character**	**Remark**
Double opening quote	"	
Hash mark	#	
Dollar	$	
Ampersand	&	
Asterisk	*	
Plus sign	+	
Hyphen	-	Do not use as first or last character of a name
Dot	.	Do not combine only numerals and dots
Zero ... Nine	0 ... 9	Do not combine only numerals and dots
Question mark	?	
At sign	@	
A ... Z	A ... Z	
Left square bracket	[	USA(1)
Back slash	\	USA(1)
Right square bracket	]	USA(1)
Caret	^	
Underscore	_	
a ... z	a ... z	
Left brace	{	USA(1)
Vertical bar	|	USA(1)
Right brace	}	USA(1)
Tilde	~	USA, SWE(1)
Adieresis	Ä	GER, SWE(1)
Odieresis	Ö	GER, SWE(1)
Udieresis	Ü	GER, SWE(1)

Table 3-5. Allowed Characters - DB Element Names (Continued)

Name of Character	Printed Character	Remark
Aring	Å	SWE(1)
adieresis	ä	GER, SWE(1)
odieresis	ö	GER, SWE(1)
udieresis	ü	GER, SWE(1)
aring	å	SWE(1)
germandbls	ß	GER(1)

(1) allowed only, if the specified character set is selected for the project in the Application Builder (USA=US english, GER=german or SWE=swedish).

Syntax Rules for PC Element Names

Rules:

- Names must not start with a digit or an underscore.
- Names must not be equal to a PC program item designation, for example PC2.

Table 3-6. Allowed Characters - PC Element Names

Name of Character	Printed Character	Remark
Space	' '	
Exclamation mark	!	
Double opening quote	"	
Hash mark	#	
Dollar	$	
Ampersand	&	
Single opening quote	'	
Opening parenthesis	(	
Closing parenthesis	)	
Asterisk	*	
Plus sign	+	
Comma	,	
Hyphen	-	
Dot	.	

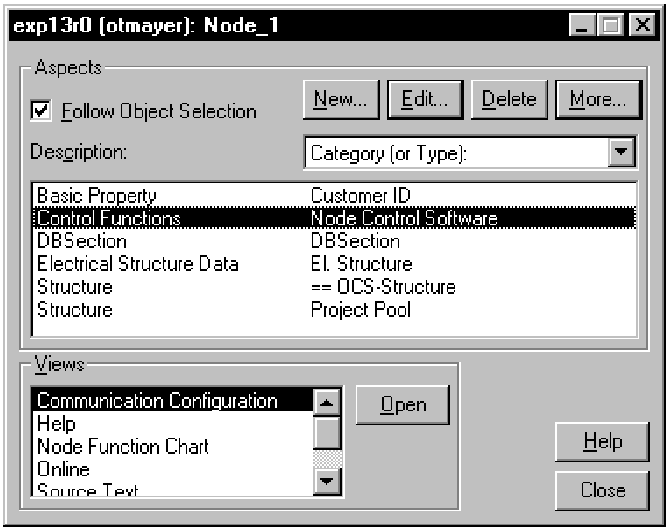
Table 3-6. Allowed Characters - PC Element Names (Continued)

Name of Character	Printed Character	Remark
Slash	/	
Zero ... Nine	0 ... 9	Must not be used as first character
Colon	:	
Semicolon	;	
Equal sign	=	
Question mark	?	
At sign	@	
A ... Z	A ... Z	
Left square bracket	[	USA(1)
Back slash	\	USA(1)
Right square bracket	]	USA(1)
Underscore	_	Must not be used as first character
a ... z	a ... z	
Left brace	{	USA(1)
Vertical bar	|	USA(1)
Right brace	}	USA(1)
Tilde	~	USA, SWE(1)
Adieresis	Ä	GER, SWE(1)
Odieresis	Ö	GER, SWE(1)
Udieresis	Ü	GER, SWE(1)
Aring	Å	SWE(1)
adieresis	ä	GER, SWE(1)
odieresis	ö	GER, SWE(1)
udieresis	ü	GER, SWE(1)
aring	å	SWE(1)
germandbls	ß	GER(1)

(1) allowed only, if the specified character set is selected for the project in the Application Builder (USA=US english, GER=german or SWE=swedish).

3.7.1.2 Open

Use the **Object | Open** menu command to open an existing Advant object. Then the **Object Window** is displayed:



☑ Follow Object Selection

Description: Category (or Type):

Basic Property	Customer ID
Control Functions	Node Control Software
DBSection	DBSection
Electrical Structure Data	El. Structure
Structure	== OCS-Structure
Structure	Project Pool

Communication Configuration
Help
Node Function Chart
Online
Source Text

Figure 3-60. Object Window

The object window may stay open on your display while you perform other activities within Structure Builder. If you check the **Follow Object Selection** field the window's content will be updated when you select for example another Advant object in a structure window.

The object window is split into two major areas, the aspects and the views area.

In the **Aspects** area you can select an aspect in the list box and inspect or modify its settings. Further on you can add a new aspect or delete an existing one to the selected Advant object.

In the list box of the **Views** area the views of the selected aspect, belonging to the **Open** command, are listed. You can select a view and open it. If the selected aspect does not belong to **Structure Builder**, the corresponding builder will be started.

Shortcut

Toolbar button:

Dialog Controls

Follow Object Selection
Check this check box if you want that the content of the object window is updated while you select other Advant objects in a structure window.

New
If you want to add another aspect to the selected Advant object, click the **New** button. Then a corresponding dialog will be displayed (see Figure 3-61).

Edit
When you click the **Edit** button the so-called **Edit Aspect Registry** dialog will be displayed. With this dialog you can inspect or modify registered data of the selected aspect (see Figure 3-62).

Delete
Click the **Delete** button to delete the aspect that is currently selected in the aspect list box. You can select one aspect at a time. You cannot delete a pool structure aspect or a project global data aspect from the **Object Window**.

More
If you click the **More** button a new window – the **Command Window** – pops up which list one or several commands that can be executed. At least the **Open** command is available. The number of commands depends on the selected aspect type. The available aspect types depend on the Builders installed.

If you select for example a basic property aspect, the **Command Window** shows the **Open** command. If you click **Open** then the **Set Attributes of Basic Property Aspect** window is displayed (see Figure 3-84).

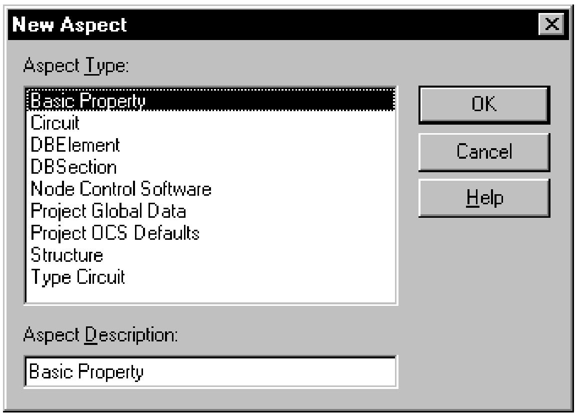
If you select a structure aspect then the Command Window shows the **Open** and the **Structure** command. If you click **Structure** the corresponding structure window will be displayed.

Aspect List Box
The aspect list box consists of two columns, **Description** and one with adjustable title. In the example in Figure 3-60 the second column is set to **Category (or Type)**. You can select between several types.

Views
In the **Views** list box the available views of the **Open** command of the selected aspect are listed. You can select one and open that view by clicking **Open**.

Additional Dialogs

- **New Aspect** dialog

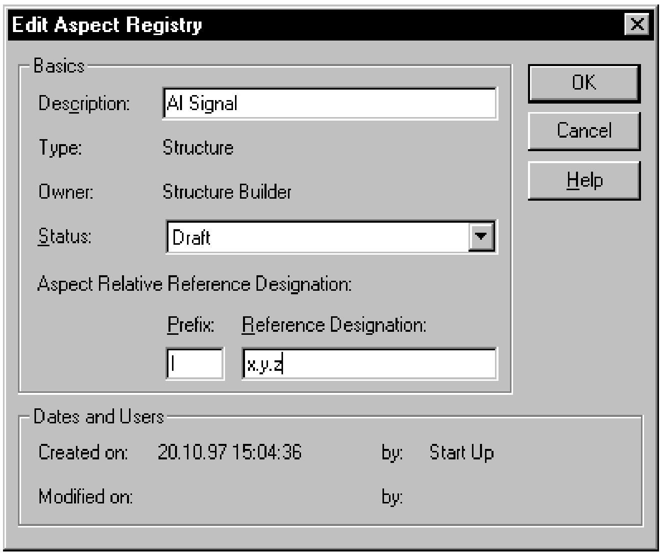


Aspect Description: Basic Property

Figure 3-61. New Aspect Dialog

Use the **New Aspects** dialog to add an aspect to the selected Advant object. All aspect types of the installed Builders will be displayed. Select an aspect type and enter an aspect description and click **OK**.

- **Edit Aspect Registry** dialog



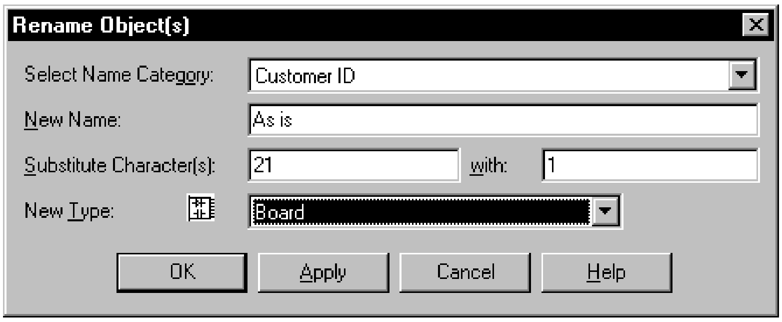
Description: AI Signal
Type: Structure
Owner: Structure Builder
Status: Draft
Prefix: I
Reference Designation: x.y.z
Created on: 20.10.97 15:04:36 by: Start Up
Modified on: by:

Figure 3-62. Edit Aspect Registry Dialog

The **Edit Aspect Registry** dialog displays basic settings of the selected aspect. Further on you can change the description, status, prefix, and the relative reference designation of the aspect.

3.7.1.3 Rename

Use the **Object | Rename** menu command to rename an existing Advant object. Then the following is displayed:



Select Name Category: Customer ID
New Name: As is
Substitute Character(s): 21 with: 1
New Type: Board

Figure 3-63. Rename Objects Dialog

With the **Rename Objects** dialog you can rename one or several existing objects. As an Advant object may have several names, you should at first select the category, for which you plan to change the name. You have the alternative to specify the new name directly or to substitute parts of the name by a given string. Further on you may change the type of the Advant objects.

When you have several Advant objects selected which do not belong to one type and you insert a new name, then the type is set to **As Is**, which means, that the individual types will not be replaced during the rename operation. But you can supersede the original types by specifying a new one common for all selected Advant objects.

In the example shown in Figure 3-63 no new name is specified. Instead the string "21" will be replaced by "1" in the names of all selected objects. Furthermore, the object type will be set to **Board**.

Dialog Controls

Select Name Category
Select the category of the Advant object you want to modify.

New Name
Enter the new name of the Advant object. If you have selected more than one Advant object, all objects will get the same name.

Substitute Character(s)
Enter the part of the Advant object's name that shall be replaced.

with
Enter a string with which the part, that was specified under **Substitute**, shall be replaced.

New Type
Select a new type for the selected Advant object from the list.

3.7.1.4 Remove From Structure

Use the **Object | Remove from Structure** menu command if you want to remove an Advant object from a structure. This command will not delete the Advant object, because it may also be placed in another structure. At least it is part of the pool. Further on this command will work only, if the object has no children in the selected structure.

The **Remove from Structure** menu command is not available for selected windows.

3.7.1.5 Delete

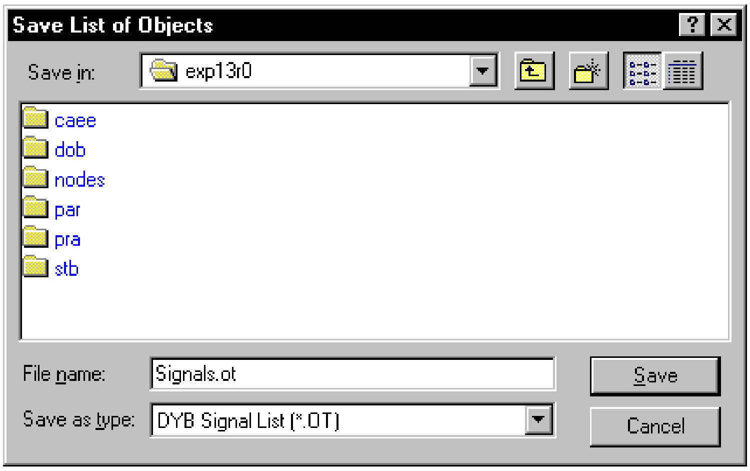
Use the **Object | Delete** menu command to delete the selected Advant object(s) together with all children.

3.7.1.6 Save As

With the **Object | Save As** menu command you can store names of Advant objects of the selected project in text format. Currently, the names of Advant objects of type **Signal** are stored in a text file. The names belong to the name category Customer ID. The stored text file is meant to be used by the Display Builder as signal list.

The default directory for the file is the project directory (\\<servername>\AdvaBld1\data\<project name>, where AdvaBld1 is a share name).

If you currently have more than one project open, select a structure or pool window of the project, for which you want to create the signal list and issue the Save As command afterwards:



File name: Signals.ot

Save as type: DYB Signal List (*.OT)

Figure 3-64. Save List of Objects Dialog

Example of a Signal List:

```
AI Signal 11
AI Signal 12
AI Signal 13
AI Signal 14
AI Signal 15
AI Signal 16
AI Signal 17
AI Signal 45
```

3.7.1.7 Exit

Use **the Object | Exit** menu command to exit Structure Builder. This will close all open projects.

3.7.2 Edit Menu

3.7.2.1 Cut

Use the **Edit | Cut** menu command if you want to delete the current selection - for example some Advant objects - in one structure window and to insert this into another structure. **Cut** is not possible between different projects. When you use the **Cut** command, the selection will be copied to the clipboard. The selection will be surrounded by a broken line. It will be visible until the **Paste** command is executed.

Shortcut

Toolbar button: ✂

Key command: Ctrl+x

3.7.2.2 Copy

Use the **Edit | Copy** menu command if you want to copy the current selection to the clipboard. You can insert the contents of the clip board into another structure of the same or another project using the **Edit | Paste** menu command.

Shortcut

Toolbar button: ⎘

Key command: Ctrl+c

3.7.2.3 Paste

Use the **Edit | Paste** menu command if you want to insert the content of the clipboard into the currently active structure. If the contents of the clip board was filled using the **Edit | Cut** command, the **Paste** command will result in a move of the selected object(s). If **Edit | Copy** was used, the **Paste** command results in an new object.

The objects will always be inserted as children of the selected object in the destination structure.

Paste is not possible into an empty structure. If you want to place an existing Advant object into an empty structure, you can drag it into the structure window. Alternatively, you can create a new object.

Shortcut

Toolbar button: 📋

Key command: Ctrl+v

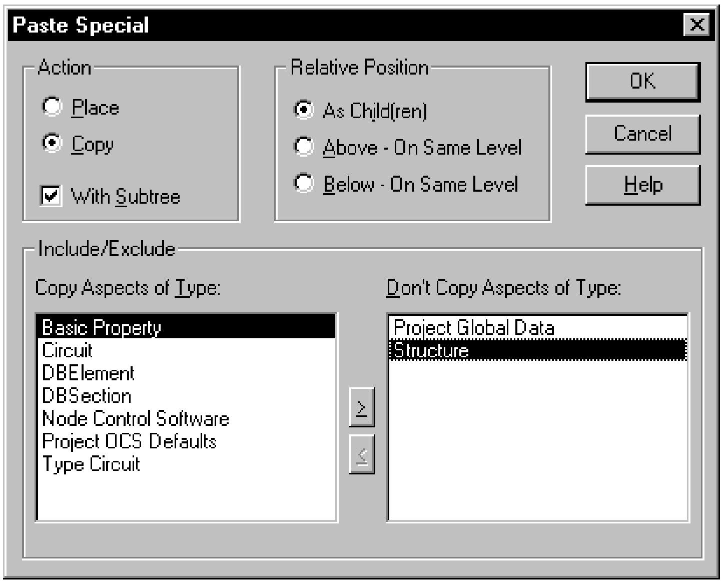
3.7.2.4 Paste Without Subtree

If you only want to copy selected objects without their subtrees, you can issue the **Paste Without Subtree** menu command.

When you have copied the selected Advant objects with the **Edit | Copy** menu command to the clip board, use the **Edit | Paste Without Subtree** menu command to copy the selected objects only. This situation is illustrated with Figure 3-18.

3.7.2.5 Paste Special

Use the **Edit | Paste Special** menu command if you want to specify the insertion of the Advant objects into the destination structure in a more detailed manner. Then the following dialog is displayed:



Paste Special

Action
○ Place
● Copy
☑ With Subtree

Relative Position
● As Child(ren)
○ Above - On Same Level
○ Below - On Same Level

Include/Exclude

Copy Aspects of Type:
Basic Property
Circuit
DBElement
DBSection
Node Control Software
Project OCS Defaults
Type Circuit

Don't Copy Aspects of Type:
Project Global Data
Structure

Figure 3-65. Paste Special Dialog

You can specify that the Advant object shall be placed or copied into the destination structure. Between different projects, **Copy** is possible, only. Further on you can specify where the Advant object shall be inserted relative to the selected destination object. It is also possible to exclude aspects of certain aspect types from the **Paste** operation.

The **Don't Copy Aspects of Type** list box lists besides the aspect types you have excluded from being pasted, aspect types that cannot be copied like structure aspects and those aspect types that are part of the source project, but not registered in the destination project.

Dialog Controls

Action
You can select either **Place** or **Copy**. **Place** is possible within one project, only. Furthermore, you can specify whether the action shall be performed with or without subtrees.

Relative Position
Select the position where the object shall be inserted relative to the selected destination object. Possible values are: **As Child(ren)**, **Above - On Same Level**, **Below - On Same Level**.

Include/Exclude
Move aspect types you do not want to be included in the paste operation, to the right box. These commands are only available when **Action** is set to **Copy**. You can initiate the movement by selecting an aspect type in the left list box and clicking the following button:

>

Deselected aspect types can be moved to the left side by clicking the following button:

<

Alternatively, you can move an aspect type by double-clicking it.

3.7.2.6 Select All

Use the **Edit | Select All** menu command if you want to select all Advant objects of the currently active structure window.

3.7.2.7 Copy Bitmap

Use the **Edit | Copy Bitmap** menu command to copy the contents of the whole or of parts of the active structure window to the clipboard. The structure will be stored as bitmap in WMF format. If you insert the bitmap with **Edit | Paste** menu command for example in Microsoft Word 97, you can still edit the text part of the bitmap.

What will be copied to the clipboard, depends on your selection within the structure window. First of all the wysiwyg principle is followed: collapsed structures will be copied as collapsed structures to the clipboard.

If no Advant object is selected, the whole structure – independent on the vertical size of the structure window – is copied. The same applies, if all objects are selected.

If one Advant object is selected, this object together with its expanded children objects is copied. The same applies for a range of objects. If you have performed a disjoined selection, the whole range from the upper to the lower object will be copied to the clipboard. An example of a disjoint selection is shown in Figure 3-22.

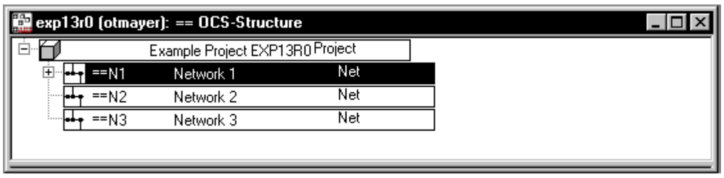
3.7.3 View Menu

3.7.3.1 Expand

Use the **View | Expand** menu command if you want expand the subtree of an selected Advant object. If a compressed structure is located below an Advant object, the object is marked with a ’+’ sign at the left side of the object (see Figure 3-66). The Expand command expands the next lower level of the subtree (see Figure 3-67). Additional subtrees on lower level will be displayed in compressed form.

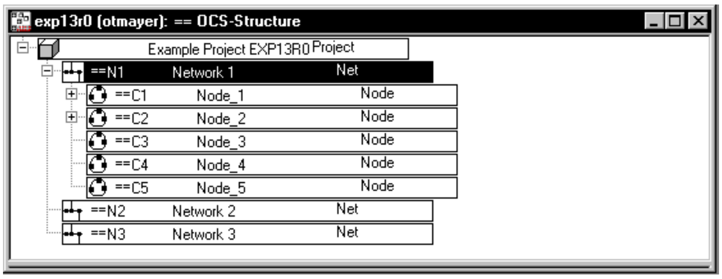
Shortcut

Toolbar button: +



	Example Project EXP13R0	Project
==N1	Network 1	Net
==N2	Network 2	Net
==N3	Network 3	Net

Figure 3-66. Compressed Subtree



	Example Project EXP13R0	Project
==N1	Network 1	Net
==C1	Node_1	Node
==C2	Node_2	Node
==C3	Node_3	Node
==C4	Node_4	Node
==C5	Node_5	Node
==N2	Network 2	Net
==N3	Network 3	Net

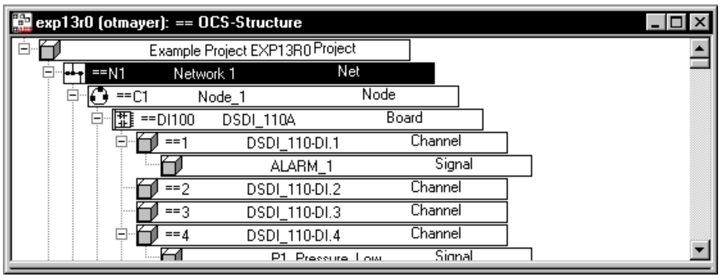
Figure 3-67. Partly Expanded Subtree

3.7.3.2 Expand Subtree

Use the **View | Expand Subtree** menu command if you want to expand a subtree with all lower level subtrees (see Figure 3-68).

Shortcut

Toolbar button:



	Example Project EXP13R0	Project
==N1	Network 1	Net
==C1	Node_1	Node
==DI100	DSDI_110A	Board
==1	DSDI_110-DI.1	Channel
	ALARM_1	Signal
==2	DSDI_110-DI.2	Channel
==3	DSDI_110-DI.3	Channel
==4	DSDI_110-DI.4	Channel
	P1_Pressure_Low	Signal

Figure 3-68. Completely Expanded Subtree

3.7.3.3 Compress Subtree

Use the **View | Compress Subtree** menu command if you want visualize an expanded subtree in compressed form. All subtrees located below the selected Advant object will be displayed in compressed form.

Shortcut

Toolbar button: ⊟

3.7.3.4 Compress All

Use the **View | Compress All** menu command if you want to visualize the whole structure in compressed form (see Figure 3-69).

Shortcut

Toolbar button:

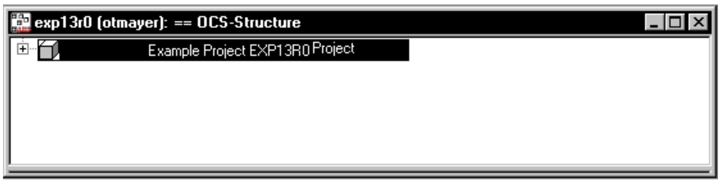
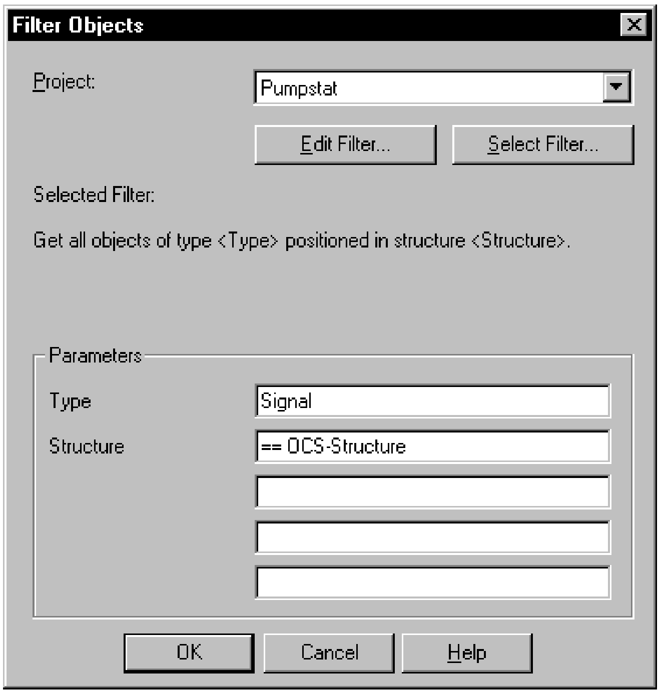

exp13r0 (otmayer): == OCS-Structure
Example Project EXP13R0 Project

Figure 3-69. Compressed Structure

3.7.3.5 Filter Objects

Use the **View | Filter Objects** menu command to select certain Advant objects according to criteria specified in a filter. Then the following dialog is displayed:



Project: Pumpstat

Selected Filter:

Get all objects of type <Type> positioned in structure <Structure>.

Type: Signal

Structure: == OCS-Structure

Figure 3-70. Filter Objects Dialog

The result of the filter operation is displayed in a **Selected Pool** window. In contrast to structure windows a pool window does not show any structure information.

Dialog Controls

Project
Select a project out of the list. The list includes all currently open projects.

Use SQL Statement in File
This control shows the currently selected file, in which the filter function is coded. It holds the SQL statements that perform the filter function. Structure Builder is coming along with some ready-to-use filters.

You can overwrite this field with the path and file name of another filter file.

Browse
Use the **Browse** button if you want to select another filter.

Edit
Use the **Edit** button if you want to modify the filter. When you press the **Edit** button the selected file will be opened by the **Notepad** editor.

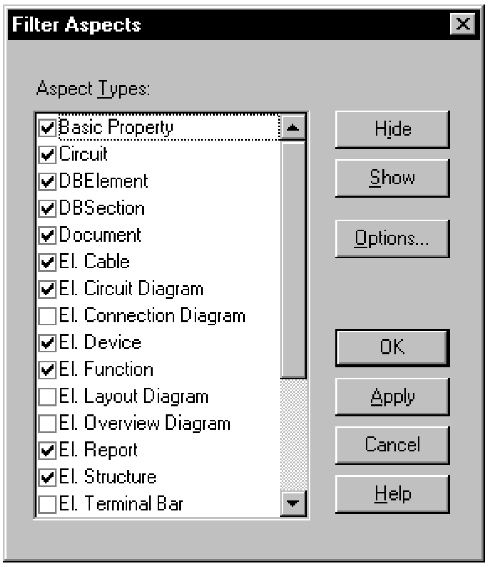
Description
The filter function is shortly described. Parameters that you can specify are surrounded by angle brackets

Parameters
With **Parameters** you can adapt the selected filter to your special needs. In the example in Figure 3-70 the object type of the Advant objects is restricted to **Signal**. You can use the labelled edit fields to specify values for the parameters.

The **View | Filter Objects** menu command is available only, if at least one structure window is open.

3.7.3.6 Filter Aspects

Use the **View | Filter Aspects** menu command if you want to specify filter conditions for the aspect area of the currently active structure window. Then the following dialog is displayed:



☑ Basic Property
☑ Circuit
☑ DBElement
☑ DBSection
☑ Document
☑ El. Cable
☑ El. Circuit Diagram
☐ El. Connection Diagram
☑ El. Device
☑ El. Function
☐ El. Layout Diagram
☐ El. Overview Diagram
☑ El. Report
☑ El. Structure
☐ El. Terminal Bar

Figure 3-71. Filter Aspect Types Dialog

The **Aspect Types** list box lists the available aspect types. Only checked aspect types will pass the filter and will be listed in the aspect area of the structure window. With **Options** you can adjust the filter to your special needs.

All aspect types are checked in as default and will be shown in the aspect area of the Structure Builder. You can change this default configuration by the **View | Filter Aspects...** dialog and you can save it by executing the command **Format | Save As Default**.

For each structure you can specify an own aspect filter. The filter is active until you deactivate it. To deactivate the filter, check all check boxes in the **View | Filter Aspects** dialog and select **Options off** in the **Options** dialog.

The filter has an influence on the aspects listed in the aspect area only, not on the **Object Window**.

Dialog Controls

Aspect Types
The **Aspect Types** list box list all aspect types available in the project. To the left of the name is a check box. If the box is checked the aspect type will be shown in the aspect area of the structure window. You can toggle the check mark by clicking into the box. Alternatively you can select an aspect type and click **Hide** or **Show** to deselect or select an aspect type for the filter.

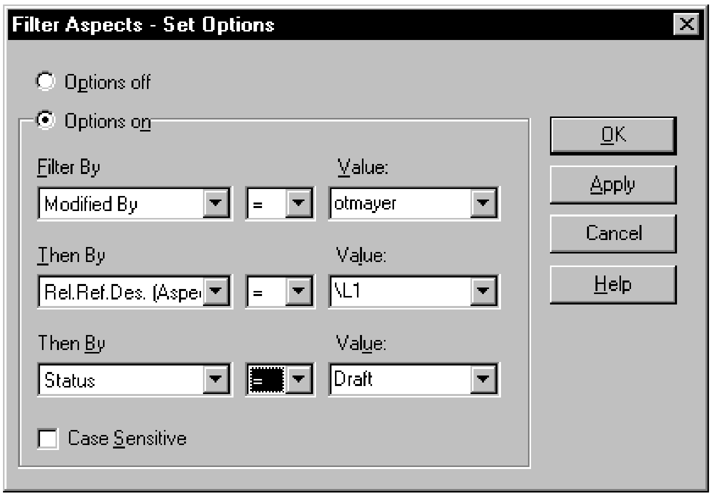
Hide
Select an aspect type and click **Hide** to deselect that aspect type.

Show
Select an aspect type and click **Show** to select that aspect type.

Options
With **Options** you can specify the filter criteria more detailed. When you click the **Options** button, another dialog will be displayed.

Additional Dialogs

Options dialog



Filter Aspects - Set Options

○ Options off
● Options on

Filter By		Value:
Modified By	=	otmayer

Then By		Value:
Rel.Ref.Des. (Aspe	=	\L1

Then By		Value:
Status	=	Draft

☐ Case Sensitive

Figure 3-72. Filter Aspects - Set Options Dialog

In the **Filter Aspects - Set Options** dialog you can specify up to three criteria that must be fulfilled for an aspect to be listed in the aspect area of the structure window. You can disable the specified options with the radio buttons **Options off** and **Options on**.

The dialog consist of three columns: **Attribute (Filtered By)**, operator, and **Value**. If you want to specify a criterion for the filter, proceed as follows:

a. Select from the **Attribute** list box an attribute of the aspect you want to specify for the filter.

b. Select from the second list box an operator

c. Enter a value in the **Value** field.

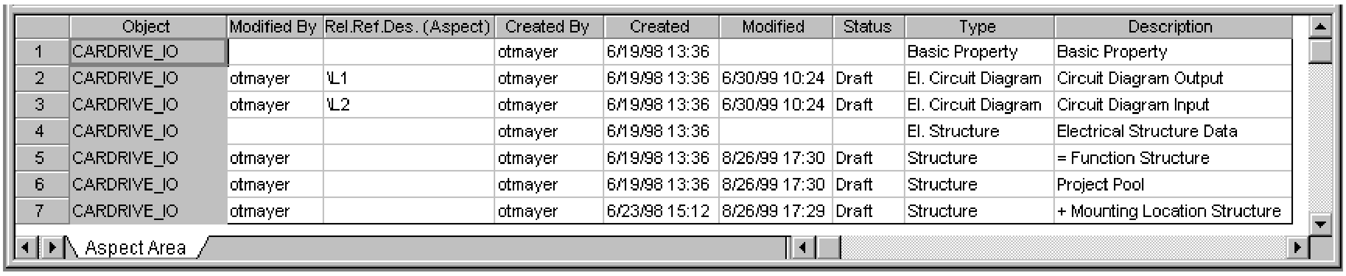
Available attributes are:

- Description
- Type
- Created
- Created By
- Modified
- Modified By
- Status
- Prefix (Aspect)
- Rel. Ref. Des. (Aspect).

The filter will execute row by row. If no value is given for a certain row, the filter ignores this row and the following ones.

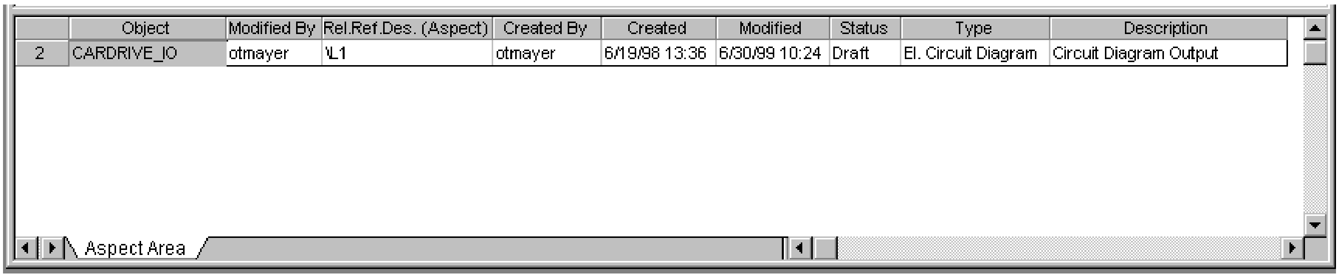
The operation of the filter is explained with the following example:

Figure 3-73 shows the aspect area of a certain structure without an active filter. In Figure 3-74 you see the same aspect area after executing the filter as shown in Figure 3-72.



	Object	Modified By	Rel.Ref.Des. (Aspect)	Created By	Created	Modified	Status	Type	Description
1	CARDRIVE_IO			otmayer	6/19/98 13:36			Basic Property	Basic Property
2	CARDRIVE_IO	otmayer	\L1	otmayer	6/19/98 13:36	6/30/99 10:24	Draft	El. Circuit Diagram	Circuit Diagram Output
3	CARDRIVE_IO	otmayer	\L2	otmayer	6/19/98 13:36	6/30/99 10:24	Draft	El. Circuit Diagram	Circuit Diagram Input
4	CARDRIVE_IO			otmayer	6/19/98 13:36			El. Structure	Electrical Structure Data
5	CARDRIVE_IO	otmayer		otmayer	6/19/98 13:36	8/26/99 17:30	Draft	Structure	= Function Structure
6	CARDRIVE_IO	otmayer		otmayer	6/19/98 13:36	8/26/99 17:30	Draft	Structure	Project Pool
7	CARDRIVE_IO	otmayer		otmayer	6/23/98 15:12	8/26/99 17:29	Draft	Structure	+ Mounting Location Structure

Figure 3-73. Filter Example: Unfiltered Aspect Area

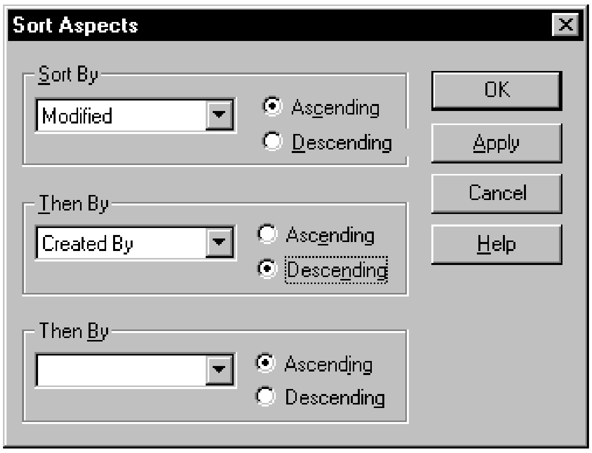


	Object	Modified By	Rel.Ref.Des. (Aspect)	Created By	Created	Modified	Status	Type	Description
2	CARDRIVE_IO	otmayer	\L1	otmayer	6/19/98 13:36	6/30/99 10:24	Draft	El. Circuit Diagram	Circuit Diagram Output

Figure 3-74. Filter Example: Filtered Aspect Area

3.7.3.7 Sort Aspects

Use the **View | Sort Aspects** menu command if you want to specify the sort order of selected rows in the aspect area of a structure window. Then the following dialog is displayed:



Sort By: Modified ● Ascending ○ Descending

Then By: Created By ○ Ascending ● Descending

Then By: ● Ascending ○ Descending

Figure 3-75. Sort Aspects Dialog

The sorting order can be defined by three parameters. The topmost parameter specifies the primary rule, the following two the consecutive sorting order. For each row you can select the parameter from a list box.

For each parameter you can specify, whether sorting shall be performed ascending or descending. In the example of Figure 3-75 the list will be sorted at first in ascending order for the **Modified** attribute and then in descending order for the **Created By** attribute. The third parameter is not specified.

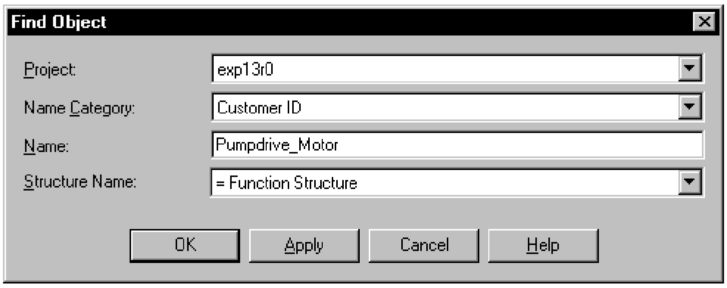
3.7.3.8 Find Object

With the **View | Find Object** menu command you can search for a certain Advant object. Select the **Project** and the **Name Category** from the list boxes, enter the **Name** of the Advant object, you want to search for, and select the **Structure Name**, in which the search shall be carried out.

If the Advant object was found, it is selected in the corresponding structure window, otherwise a message will be displayed.

If you want to search for an Advant object rather in the whole project than in a certain structure, then select **Project Pool** in the **Structure Name** list box.

The **View | Find Object** menu command is available only, if at least one structure window is open.



Find Object

Project: exp13r0

Name Category: Customer ID

Name: Pumpdrive_Motor

Structure Name: = Function Structure

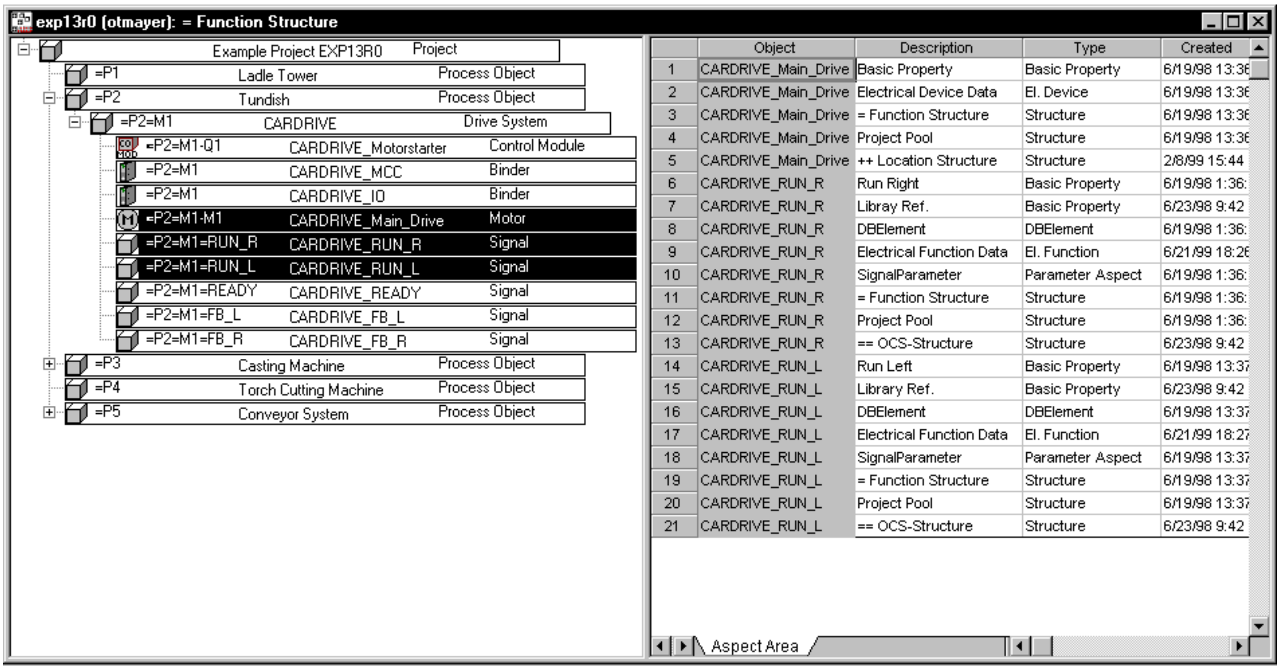
Figure 3-76. Find Object Dialog

3.7.3.9 Split Horizontally

Use the **View | Split Horizontally** menu command if you want to split the structure window horizontally. Then the object area will reside above the aspect area.

3.7.3.10 Split Vertically

Use the **View | Split Vertically** menu command if you want to split the structure window vertically. Then the object area will reside to the left of the aspect area.This arrangement is shown in Figure 3-77 and is the default setting at start-up of Structure Builder.



exp13r0 (otmayer): = Function Structure

	Example Project EXP13R0	Project
=P1	Ladle Tower	Process Object
=P2	Tundish	Process Object
=P2=M1	CARDRIVE	Drive System
=P2=M1-Q1	CARDRIVE_Motorstarter	Control Module
=P2=M1	CARDRIVE_MCC	Binder
=P2=M1	CARDRIVE_IO	Binder
=P2=M1-M1	CARDRIVE_Main_Drive	Motor
=P2=M1=RUN_R	CARDRIVE_RUN_R	Signal
=P2=M1=RUN_L	CARDRIVE_RUN_L	Signal
=P2=M1=READY	CARDRIVE_READY	Signal
=P2=M1=FB_L	CARDRIVE_FB_L	Signal
=P2=M1=FB_R	CARDRIVE_FB_R	Signal
=P3	Casting Machine	Process Object
=P4	Torch Cutting Machine	Process Object
=P5	Conveyor System	Process Object

	Object	Description	Type	Created
1	CARDRIVE_Main_Drive	Basic Property	Basic Property	6/19/98 13:36
2	CARDRIVE_Main_Drive	Electrical Device Data	El. Device	6/19/98 13:36
3	CARDRIVE_Main_Drive	= Function Structure	Structure	6/19/98 13:36
4	CARDRIVE_Main_Drive	Project Pool	Structure	6/19/98 13:36
5	CARDRIVE_Main_Drive	++ Location Structure	Structure	2/8/99 15:44
6	CARDRIVE_RUN_R	Run Right	Basic Property	6/19/98 1:36:
7	CARDRIVE_RUN_R	Libray Ref.	Basic Property	6/23/98 9:42
8	CARDRIVE_RUN_R	DBElement	DBElement	6/19/98 1:36:
9	CARDRIVE_RUN_R	Electrical Function Data	El. Function	6/21/99 18:26
10	CARDRIVE_RUN_R	SignalParameter	Parameter Aspect	6/19/98 1:36:
11	CARDRIVE_RUN_R	= Function Structure	Structure	6/19/98 1:36:
12	CARDRIVE_RUN_R	Project Pool	Structure	6/19/98 1:36:
13	CARDRIVE_RUN_R	== OCS-Structure	Structure	6/23/98 9:42
14	CARDRIVE_RUN_L	Run Left	Basic Property	6/19/98 13:37
15	CARDRIVE_RUN_L	Library Ref.	Basic Property	6/23/98 9:42
16	CARDRIVE_RUN_L	DBElement	DBElement	6/19/98 13:37
17	CARDRIVE_RUN_L	Electrical Function Data	El. Function	6/21/99 18:27
18	CARDRIVE_RUN_L	SignalParameter	Parameter Aspect	6/19/98 13:37
19	CARDRIVE_RUN_L	= Function Structure	Structure	6/19/98 13:37
20	CARDRIVE_RUN_L	Project Pool	Structure	6/19/98 13:37
21	CARDRIVE_RUN_L	== OCS-Structure	Structure	6/23/98 9:42

Figure 3-77. Vertically Split Structure Window

3.7.3.11 Hide/Show Aspect Area

Use the **View | Hide/Show Aspect Area** menu command if you want the aspect area to be hidden or visible. Alternatively you can drag the adjustable separator to modify the relation between object area and aspect area size. See also Figure 3-10. If the aspect area is hidden, certain actions run faster than with visible aspect area.

3.7.3.12 Toolbar

Use the **View | Toolbar** menu command if you want to hide or show the toolbar. When the toolbar is visible, this menu item is checked. The default setting is that the toolbar is visible.

3.7.3.13 Status Bar

Use the **View | Status Bar** menu command if you want to hide or show the status bar. When the status bar is visible, this menu item is checked. The default setting is that the status bar is visible.

3.7.4 Project Menu

3.7.4.1 Open

See Section 3.6.2.1, Open.

3.7.4.2 Close

See Section 3.6.2.2, Close.

3.7.4.3 Administration

See Section 3.6.2.3, Administration.

3.7.4.4 Upgrade

See Section 3.6.2.4, Upgrade.

3.7.4.5 Import

See Section 3.6.2.5, Import.

3.7.4.6 Export

See Section 3.6.2.6, Export.

3.7.4.7 Recent Project List

See Section 3.6.2.7, Recent Project List.

3.7.5 Options Menu

3.7.5.1 Customize Object Types

Use the **Options | Customize | Object Types** menu command create new or modify existing object types. The dialog shown in Figure 3-78 will be displayed:

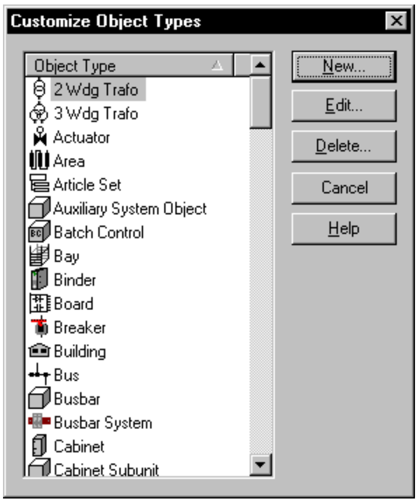


Figure 3-78. Customize Object Types Dialog

The dialog consists of an object type list and some buttons. In the list the icon and the name of the object types are shown. You can add a new object type, modify or delete an existing one.

Dialog Controls

New

If you want to add a new object type, click **New.** The following dialog will be displayed.

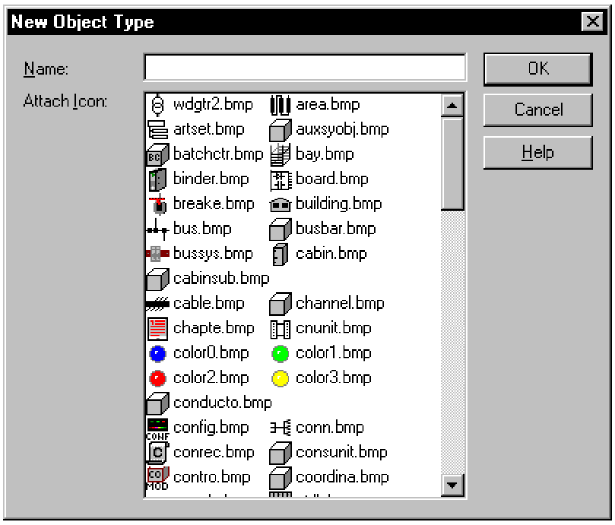


Figure 3-79. New Object Type Dialog

Enter a new for the new object type, select an icon from the list, and click **OK**. You can add an own, additional icon to the list: Copy your bitmap file to the following project directory:

```
advabld1\data\<project name>\stb\bmp\
```

<project name> has to be replaced by the actual project name. The standard bitmap size is 16 x 16 pixels.

Edit

If you want to modify an existing object type, click **Edit.** The dialog shown in Figure 3-80 will be displayed.

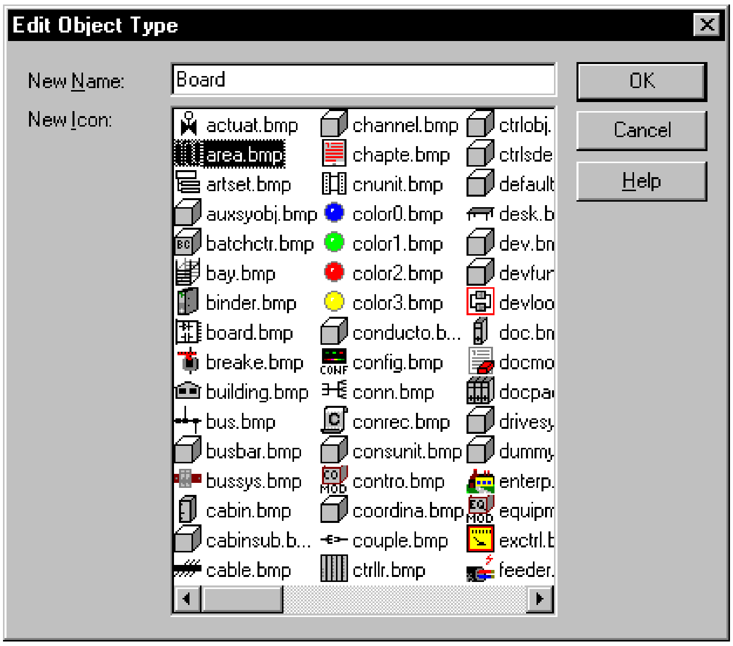


Figure 3-80. Edit Object Type Dialog

If you want to rename the selected object type, write the new name into the **New Name** field. If you want to assign another icon to it, select one from the **New Icon** list.

Delete

Click the Delete button, if you want to delete the selected object type. Multiple selection is possible.

3.7.5.2 Project

See Section 3.6.4.1, Project.

3.7.6 Window Menu

3.7.6.1 Structure

See Section 3.6.5.1, Structure.

3.7.6.2 Close

Use the **Window | Close** menu command if you want to close the currently active structure window.

3.7.6.3 Cascade

Use the **Window | Cascade** menu command if you want to arrange several structure windows in a cascading manner. Then the windows will overlap and are slightly shifted relatively to each other.

3.7.6.4 Tile Horizontally

Use the **Window | Tile Horizontally** menu command if you want to arrange several structure windows one above the other.

3.7.6.5 Tile Vertically

Use the **Window | Cascade** menu command if you want to if you want to arrange several structure windows one beneath the other.

3.7.6.6 Arrange Icons

Use the **Window | Arrange Icons** menu command if you want to arrange the icons of structure windows at the bottom of the Structure Builder window.

3.7.6.7 Window | 1, 2,... (Activate Structure Windows)

Use the **Window | 1, 2, ..(Activate Structure Window)** menu command if you want to bring a certain structure window on top of the display. In the actual Window menu Project 1 is replaced by the name of an open project. If more than one project are open, they are listed in consecutive rows of the Window menu.

3.7.7 Help Menu

3.7.7.1 Contents

See Section 3.6.6.1, Contents.

3.7.7.2 On Context

See Section 3.6.6.2, On Context.

3.7.7.3 How to Use Help

See Section 3.6.6.3, How to Use Help.

3.7.7.4 Release Notes

See Section 3.6.6.4, Release Notes.

3.7.7.5 About Structure Builder

See Section 3.6.6.5, About Structure Builder.

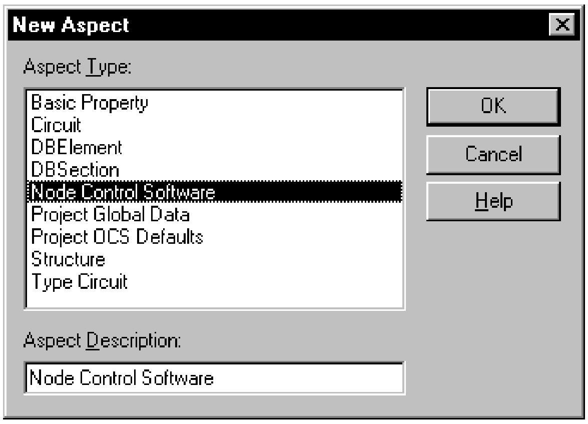
3.8 Configuration/Application Building Menus; Aspect Context

3.8.1 Aspect Menu

3.8.1.1 New

Use the **Aspect | New** menu command if you want to add a new aspect to the selected object. The command is available when you select an aspect of the corresponding object in the aspect area. The dialog is shown in Figure 3-81.

Select an aspect type and click **OK**.

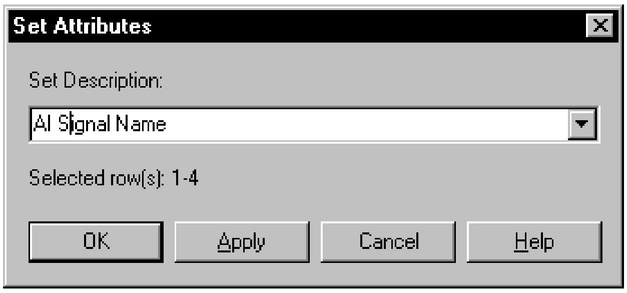


Aspect Description: Node Control Software

Figure 3-81. New Aspect Dialog

3.8.1.2 Set Attribute

If you want to set aspect attributes that are changeable, select the attributes in the aspect area. The issue the menu command Aspect | Set Attribute. The following dialog will be displayed:



Set Description: AI Signal Name

Selected row(s): 1-4

Figure 3-82. Set Attributes of Aspects

In the example shown four cells of the Description attribute are selected. You can overwrite the value in the edit field. The new value will be set in all selected cells.

3.8.1.3 More ...

Use the **Aspect | More** menu command if you want to administer the aspect, that you have selected in the aspect area of the currently active structure window. Administration can mean that you want to change the name of an aspect or that you want to display its structure window. Further on you may want to print a certain view of that aspect. If you click **More** then a submenu will be displayed. It shows at least the **Open** command. Some other commands may be available depending on the type of the selected aspect.

The commands available under **Aspect | More** can also be activated from the object window (see Figure 3-60), which can be activated by double-clicking an Advant object in the structure window or with the help of the **Object | Open** menu command.

If you select more than one aspect in the aspect area, then the **More** menu command is not available.

In the following some examples of the **More** menu command are shown. The differences in the number of available submenus depend on the type of the selected aspect.

More Menu Command for Basic Property Aspect

When you select a basic property aspect, the **Open** command is the only one that is available. The submenu is shown in Figure 3-83.

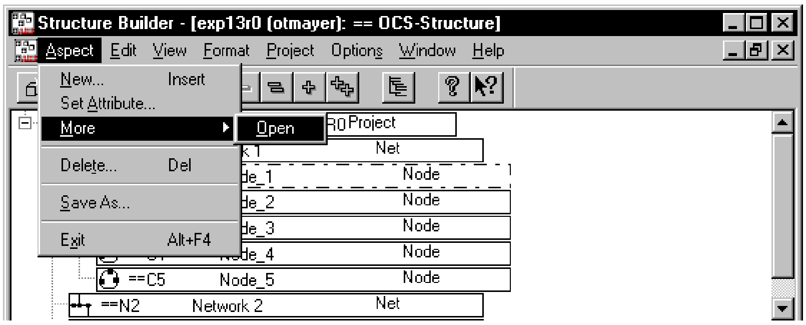
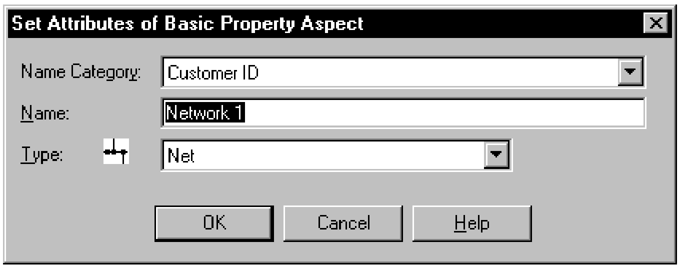


Figure 3-83. Aspect More Dialog

When you click **Open** then the **Set Attributes of Basic Property Aspect** dialog will be displayed (see Figure 3-84):


Set Attributes of Basic Property Aspect

Name Category: Customer ID

Name: Network 1

Type: Net

Figure 3-84. Set Attributes of Basic Property Aspect Dialog

More Menu Command for Structure Aspect

When you select a structure aspect, the **Open** command is the only one that is available. The submenu is shown in Figure 3-85.

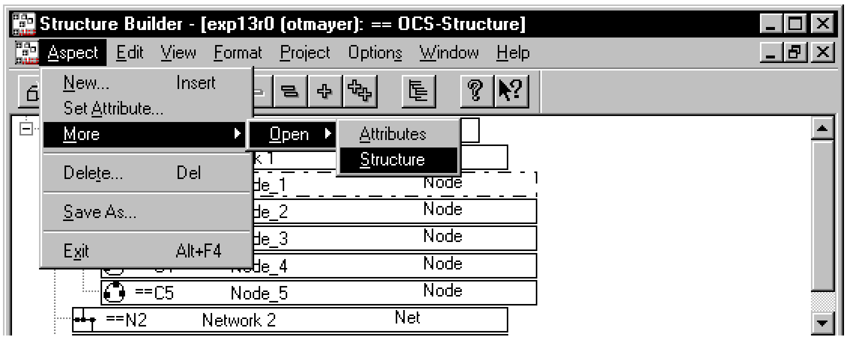
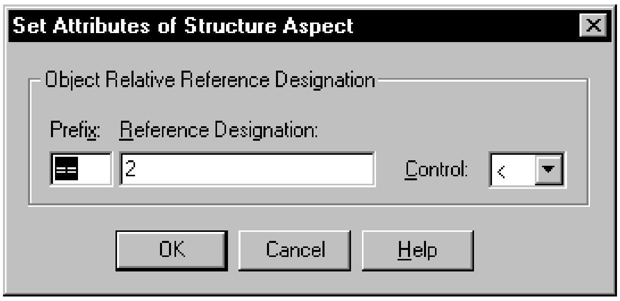


Figure 3-85. Aspect More Dialog for a Structure Aspect

For a structure aspect the **Open** menu has another submenu with an **Attributes** and a **Structure** command. If you click **Structure** the corresponding structure window will be displayed, if it is not already open.

If you click **Attributes** then the structure aspect's **Set Attributes** dialog will be displayed. It is shown in Figure 3-86.


Set Attributes of Structure Aspect
Object Relative Reference Designation
OK
Cancel
Help

Prefix: ==
Reference Designation: 2
Control: <

Figure 3-86. Set Attributes of Structure Aspect Dialog

In this dialog you can enter a relative reference designation for the Advant object. You can enter a prefix and the reference designation.

Further on you can select a control that specifies the inheritance of reference designations. Normally reference designations reflect the hierarchy of objects. An object on the third level for example carries the designation from the first, the second and the third level, concatenated in a certain way (see Figure 3-54). It is possible to define that

- The inheritance shall stop at a certain Advant object or
- the inheritance shall start a new sequence of concatenations, beginning with the selected Advant object.

By default the control field is empty. The means that inheritance works as usual. If you want to restart at the selected object with another designation scheme, select >. The selected object will get the entered reference designation and the children’s designations will be concatenated in the usual manner.

If you want to stop inheritance in the current structure at the selected Advant object, select < from the list. All children below this object will get the same reference designation. An example is shown in Figure 3-87: For the channel object t DSDI_110-DI.1 the control is set to < and the signal object assigned to this channel will get the same absolute reference designation as the channel.

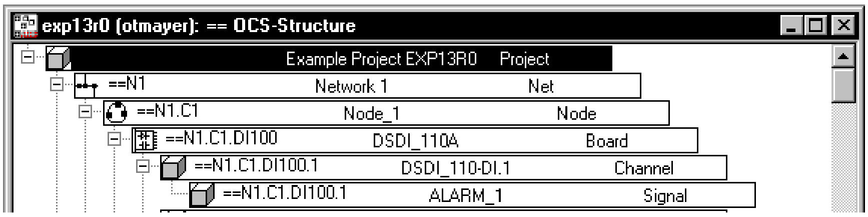

exp13r0 (otmayer): == OCS-Structure
Example Project EXP13R0 Project
==N1 Network 1 Net
==N1.C1 Node_1 Node
==N1.C1.DI100 DSDI_110A Board
==N1.C1.DI100.1 DSDI_110-DI.1 Channel
==N1.C1.DI100.1 ALARM_1 Signal

Figure 3-87. Example of Reference Designations with < Control

More Menu Command for Node Control Software Aspect

When you select a node control software aspect, the **Open** command gets another submenu which is shown in Figure 3-88.

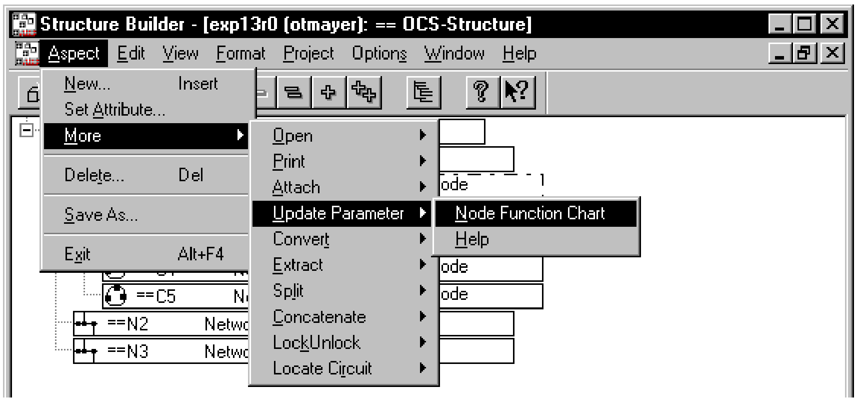


Figure 3-88. Aspect More Dialog for Node Control Software Dialog

The displayed commands offer features that will be supplied by other builders, the Application Builder and the Function Chart Builder. If you click for example **Node Function Chart** then the Function Chart Builder will start on the corresponding node.

Alternatively you can start the same activity from the object window’s **More** button or by selecting a view and clicking **Open** (see Figure 3-60).

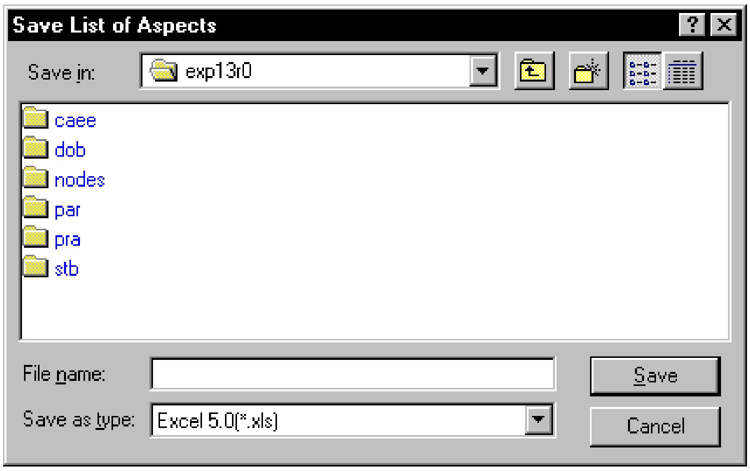
3.8.1.4 Delete

Use the **Aspect | Delete** menu command if you want to delete one or several aspects. Select the aspects you want to delete and activate the **Aspect | Delete** menu command.

3.8.1.5 Save As

Use the **Aspect | Save As** menu command if you want to store the contents of the aspect area in Microsoft Excel format or in tabulator separated text format. The default directory for the file is the project directory (\\<servername>\AdvaBld1\data\<project name>, where AdvaBld1 is a share name).

A standard Windows NT **Save** dialog will be displayed.



Save List of Aspects

Save in: exp13r0

caee
dob
nodes
par
pra
stb

File name:

Save as type: Excel 5.0(*.xls)

Figure 3-89. Save List of Aspects Dialog

3.8.1.6 Exit

See Section 3.6.2.8, Exit.

3.8.2 Edit Menu

3.8.2.1 Copy

Use the **Edit | Copy** menu command aspects from one Advant object to another one. To copy aspects perform the following steps:

1. Select the aspects you want to copy in the **Aspect Area**.
2. Select the **Edit | Copy** menu command.
3. Select the Advant objects to which you want to copy the aspects in the **Object Area**.
4. Select the **Edit | Paste** menu command.

Alternatively you can perform the same action by dragging the selected aspects from the **Aspect Area** to *one* Advant object in the **Object Area**. Click the mouse button when the mouse cursor is over the border line of the selected aspects. Then the form of the cursor changes from a cross to an arrow:

Cursor to select cells: ✚ ; cursor for drag and drop: ↖

3.8.3 View Menu

3.8.3.1 Expand

See Section 3.7.3.1, Expand.

3.8.3.2 Expand Subtree

See Section 3.7.3.2, Expand Subtree.

3.8.3.3 Compress Subtree

See Section 3.7.3.3, Compress Subtree.

3.8.3.4 Compress All

See Section 3.7.3.4, Compress All.

3.8.3.5 Filter Objects

See Section 3.7.3.5, Filter Objects.

3.8.3.6 Filter Aspects

See Section 3.7.3.6, Filter Aspects.

3.8.3.7 Sort Aspects

See Section 3.7.3.7, Sort Aspects.

3.8.3.8 Find Object

See Section 3.7.3.8, Find Object.

3.8.3.9 Split Horizontally

See Section 3.7.3.9, Split Horizontally.

3.8.3.10 Split Vertically

See Section 3.7.3.10, Split Vertically.

3.8.3.11 Hide/Show Aspect Area

See Section , Split Vertically.

3.8.3.12 Toolbar

See Section 3.7.3.12, Toolbar.

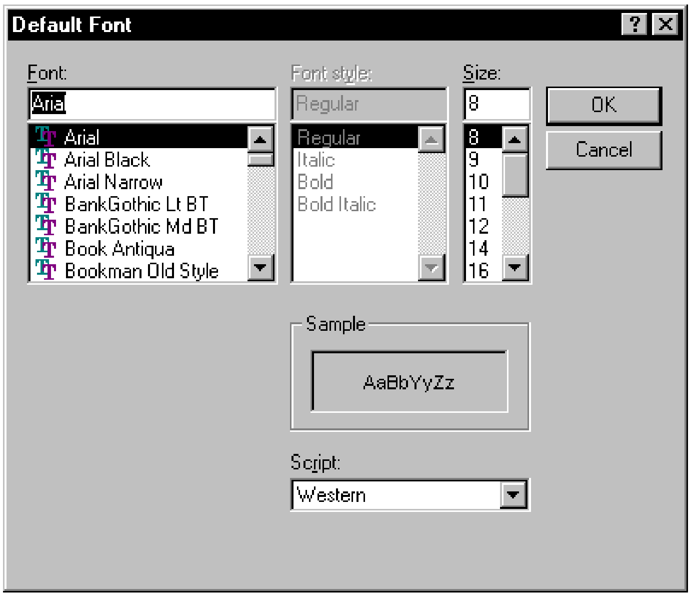
3.8.3.13 Status Bar

See Section 3.7.3.13, Status Bar.

3.8.4 Format Menu

3.8.4.1 Font

Use the **Format | Font** menu command if you want to select another font to be used for the display of the aspect area of the currently active structure window.



Font: Arial
Font style: Regular
Size: 8
Script: Western

Figure 3-90. Format - Font Dialog

Dialog Controls

Font
Lists the available fonts.

Font Style
Lists the available styles for the specified font.

Size
Lists the available point sizes for the specified font.

Sample
Shows a sample of how text will appear with the specified font settings.

Script
Lists the available language scripts for the specified font. Pick the one appropriate for the language your computer is set up for.

3.8.4.2 Alignment

Use the **Format | Alignment** menu command if you want to specify how text shall be aligned in the aspect area of the currently active structure window. Then the following dialog is displayed:

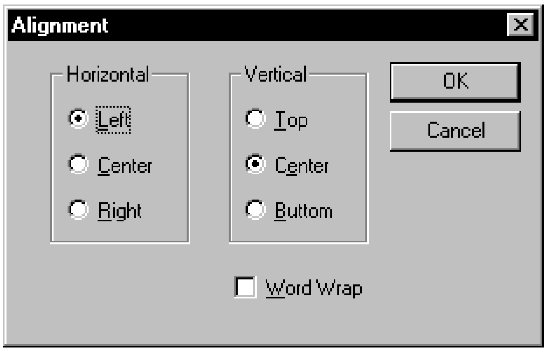


Figure 3-91. Format - Alignment Dialog

You can determine the alignment for individual cells.

Dialog Controls

Horizontal

Left
To align the text in the selected cells to the left, click **Left**.

Center
To center the text in the selected cells, click **Center**.

Right
To align the text in the selected cells to the right, click **Right**.

Vertical

Top
To align the text in the selected cells to the top, click **Top**.

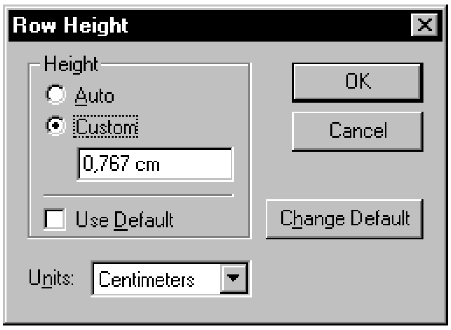
Center
To center the text in the selected cells, click **Center**.

Bottom
To align the text in the selected cells to the bottom, click **Bottom** .

Word Wrap
To align multiple lines of text within a cell, check the **Word Wrap** check box.
Note, that the row height must be adjusted properly to see multiple lines within a cell.

3.8.4.3 Row Height

Use the **Format | Row | Row Height** menu command if you want to specify the height of an individual row in the aspect area of the currently active structure window. Then the following dialog is displayed:



○ Auto
● Custom
0,767 cm
☐ Use Default
Units: Centimeters

Figure 3-92. Format - Row Height Dialog

Dialog Controls

Auto
Click **Auto** to let **Structure Builder** determine the row height, that fits best to the current font settings.

Custom
Select **Custom** if you want to specify the row height. Then enter the value in the field below the custom button.

The actual height of the selected cells is displayed. If cells with different height are selected, the height of the cell with a white background is displayed.

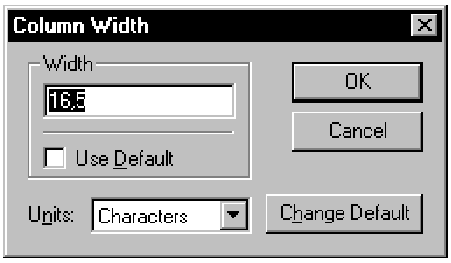
Use Default
You can specify a default height and you can determine whether the default setting shall be used or not. If you check the **Use Default** check box, all rows will get the specified height. The former settings will be lost.

Units
Select one of the possible units.

Change Default
You can specify a default height and you can determine whether the default setting shall be used or not. If you check the **Use Default** check box, all rows will get the specified height. The former settings will be lost.

3.8.4.4 Column Width

Use the **Format | Column | Column Width** menu command if you want to specify the width of selected columns. Then the following dialog is displayed:



Width: 16,5

Units: Characters

Figure 3-93. Format - Column Width Dialog

When the dialog is displayed, it shows the current width of the selected column or cell. You can overwrite this value to adapt the column width to your own needs.

Dialog Controls

Width
The actual width of the selected cells is displayed. If cells with different width are selected, the width of the cell with a white background is displayed.

You can specify a default width and you can determine whether the default setting shall be used or not. If you check the **Use Default** check box, all columns will get the specified width. The former settings will be lost.

Units
Select one of the possible units.

Change Default
You can specify a default height and you can determine whether the default setting shall be used or not. If you check the **Use Default** check box, all rows will get the specified height. The former settings will be lost.

3.8.4.5 Autofit

Use the **Format | Column | Autofit** menu command, to let Structure Builder determine the optimal width of the selected column(s). The autofit value is always greater than or equal to the default value.

3.8.4.6 Column Order

Use the Format | Column Order menu command if you want to specify, which columns are visible in a data sheet or in the aspect area of the currently active structure window and in which order they appear. Then the following dialog is displayed:

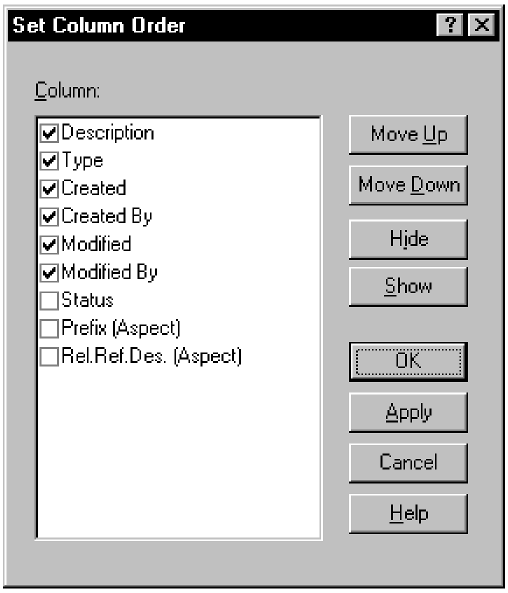


Figure 3-94. Format - Set Column Order Dialog

Dialog Controls

Column
The **Column** list box list all columns available. The check box before the column name indicates whether the column is currently visible or not.

Move Up
Select a certain column and click **Move Up** to move it one position upwards.

Move Down
Select a certain column and click **Move Down** to move it one position downwards.

Hide
Select a certain column and click **Hide** to hide it in the aspect area. You can achieve the same result by clicking into the check box right to the column name.

Show
Select a certain column and click **Show** to make it visible in the aspect area. You can achieve the same result by clicking into the check box right to the column name.

3.8.4.7 Fix/Unfix Column

Use the **Format | Column | Fix Column** menu command to prevent one or several columns to scroll horizontally, if you click the horizontal scroll bar. Before you issue the command, select the columns you want to fix. If there are to the left of the selected columns some columns not selected, these will be hidden after issuing the command.

If columns are already fixed, you can use the **Format | Column | Fix Column** menu command to unfix them. Afterwards all columns will scroll horizontally.

3.8.4.8 Save as Default

Use the **Format | Save as Default** menu command to save your settings made with the commands of the **Format** and **View** menu that are relevant for the aspect area. These values are stored on your PC. Other members of your project may use other settings. Settings can be specified for the aspect area and for data sheets.

3.8.5 Project Menu

3.8.5.1 Open

See Section 3.6.2.1, Open.

3.8.5.2 Close

See Section 3.6.2.2, Close.

3.8.5.3 Administration

See Section 3.6.2.3, Administration.

3.8.5.4 Upgrade

See Section 3.6.2.4, Upgrade.

3.8.5.5 Import

See Section 3.6.2.5, Import.

3.8.5.6 Export

See Section 3.6.2.6, Export.

3.8.5.7 Recent Project List

See Section 3.6.2.7, Recent Project List.

3.8.6 Options Menu

3.8.6.1 Customize Object Types

See Section 3.7.5.1, Customize Object Types.

3.8.6.2 Project

See Section 3.6.4.1, Project.

3.8.7 Window Menu

3.8.7.1 Structure

See Section 3.6.5.1, Structure.

3.8.7.2 Close

See Section 3.7.6.2, Close.

3.8.7.3 Cascade

See Section 3.7.6.3, Cascade.

3.8.7.4 Tile Horizontally

See Section 3.7.6.4, Tile Horizontally.

3.8.7.5 Tile Vertically

See Section 3.7.6.5, Tile Vertically-

3.8.7.6 Arrange Icons

See Section 3.7.6.6, Arrange Icons.

3.8.7.7 Window | 1, 2,... (Activate Structure Windows)

See Section 3.7.6.7, Window | 1, 2,... (Activate Structure Windows).

3.8.8 Help Menu

3.8.8.1 Contents

See Section 3.6.6.1, Contents.

3.8.8.2 On Context

See Section 3.6.6.2, On Context.

3.8.8.3 How to Use Help

See Section 3.6.6.3, How to Use Help.

3.8.8.4 Release Notes

See Section 3.6.6.4, Release Notes.

3.8.8.5 About Structure Builder

See Section 3.6.6.5, About Structure Builder.

Chapter 4 Runtime Operation

4.1 Operating Overview

Not applicable here.

4.2 Runtime Tutorial

Not applicable here.

4.3 Operating Instructions

Not applicable here.

4.4 Runtime Operation Menus

Not applicable here.

Chapter 5 Maintenance

5.1 Error Messages

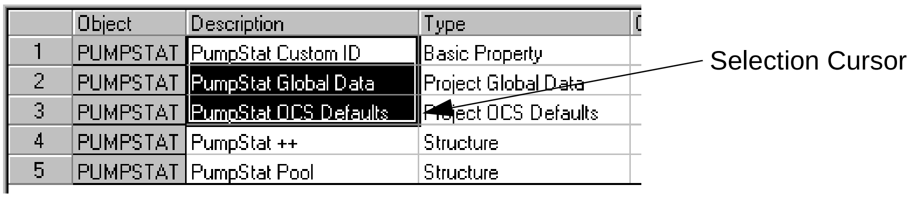
Structure Builder displays error messages that might be generated by itself or by another Builder, if a problem has occurred. They will be displayed in an extra window. On top of the window the latest message is listed, while older ones are below.

Appendix A Keyboard Reference

A.1 Special Keys for Aspect Area Navigation

Navigation within the aspect area is possible not only with the mouse, but also with the keyboard. Table A-1 lists the keys you may use for navigation. The cells in the aspect area may stay in different modes:

- Selection mode; this is the normal mode of the aspect area when you open a structure window. You may select one or several cells to perform an activity on those afterwards. An example is: Select some cells of the Description column, press the right mouse button and select **Set Attribute**... to overwrite all settings of the selected cells. The cursor in this mode looks like shown in Table A-1. The cell with the white background is the active cell.

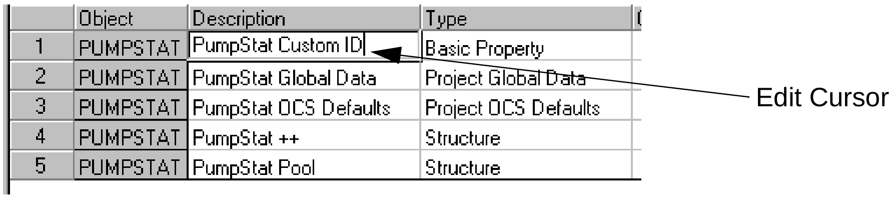


	Object	Description	Type
1	PUMPSTAT	PumpStat Custom ID	Basic Property
2	PUMPSTAT	PumpStat Global Data	Project Global Data
3	PUMPSTAT	PumpStat OCS Defaults	Project OCS Defaults
4	PUMPSTAT	PumpStat ++	Structure
5	PUMPSTAT	PumpStat Pool	Structure

Selection Cursor

Figure A-1. Selection Cursor in Aspect Area

- Cell edit mode. It is possible to select a certain cell, change the mode to cell edit mode by pressing <**F2**> and edit the text of that cell directly. Alternatively, you can just start typing after selecting a cell. The edit cursor looks like shown in Table A-2 for the **Description** cell of row one. This is not possible for read-only cells



	Object	Description	Type
1	PUMPSTAT	PumpStat Custom ID	Basic Property
2	PUMPSTAT	PumpStat Global Data	Project Global Data
3	PUMPSTAT	PumpStat OCS Defaults	Project OCS Defaults
4	PUMPSTAT	PumpStat ++	Structure
5	PUMPSTAT	PumpStat Pool	Structure

Edit Cursor

Figure A-2. Edit Cursor in Aspect Area

Table A-1. Special Keys for Aspect Area Navigation

Action	Key Stroke
Place the selection cursor in upper left corner	<**Ctrl+Pos 1**>
Place the selection cursor in lower right corner	<**Ctrl+End**>
Place the selection cursor at the next cell below	<**CursorDown**>
Place the selection cursor at the next cell above	<**CursorUp**>
Place the selection cursor at the next cell to the left	<**CursorLeft**>
Place the selection cursor at the next cell to the right	<**CursorRight**>
Switch from selection mode to cell edit mode	<**F2**>
Switch from cell edit mode to selection mode	<**Esc**>
Store value (cell edit mode) and place selection cursor at the next cell below	<**Return**>
Store value (cell edit mode) and place selection cursor at the next cell to the right	<**Tab**>
Add next cell below to the set of selected cells	<**Shift+CursorDown**>
Add next cell above to the set of selected cells	<**Shift+CursorUp**>
Add next cell to the left to the set of selected cells	<**Shift+CursorLeft**>
Add next cell to the right to the set of selected cells	<**Shift+CursorRight**>
Add all cells below to the set of selected cells	<**Shift+Ctrl+CursorDown**>
Add all cells above to the set of selected cells	<**Shift+Ctrl+CursorUp**>
Add all cells to the left to the set of selected cells	<**Shift+Ctrl+CursorLeft**>
Add all cells to the right to the set of selected cells	<**Shift+Ctrl+CursorRight**>

Appendix B Glossary of Terms

Administration

All activities covering user registration and creation, renaming, backup and restore, and deletion of projects are summarized under the topic administration or project administration.

AdvaBuild_engineers

Name of a Windows NT group created for working with **AdvaBuild Engineering Software**. Via this group the access rights of users are controlled. All members of this group can access project data. Therefore it is necessary to be assigned to this group.

Creation and deletion of projects is also controlled via the **AdvaBuild_engineers** group. But in addition you need the administrator password for the database user **EOSTB**.

Aspect

There are often several ways to look at an Advant object, depending on how you want to handle it. When for example an Advant object is representing a valve, then you might be interested in a drawing of that valve or in its loop. Then you may create with a corresponding Builder an CAEE aspect for the drawing and a control function aspect for the loop. The aspect stores the corresponding data. An aspect is an instance of an aspect type. Normally a Builder supplies some aspect types it is able to work on. You can start a Builder on an aspect by opening one of its views.

Aspect Area

The aspect area is a view into the aspect registry. It uses a spread sheet presentation style. Each row of the aspect area represents one aspect, each column of the aspect area one of the aspect's attributes stored in the aspect registry. For each aspect additional data are stored in a Builder specific manner. Structure Builder stores additional data as attributes which can be displayed, for example, in data sheets.

Aspect Attribute

An attribute holds descriptive data of an aspect.

Aspect Registry

The aspect registry is the database of the Aspect Request Broker. All aspects of a project are registered there.

Aspect System

The Aspect Request Broker communicates with a Builder via a so-called Aspect System Interface. When some Builders share an aspect system interface, these Builders are referred to as an aspect system. Therefore, an aspect system may consist of one or several Builders.

Aspect Type

Each Builder supplies several aspect types. Examples of aspect types are basic property aspect, structure aspect, or node control software aspect. An aspect type is designed for special tasks. These tasks will be performed by the corresponding Builders or aspect systems. An aspect type works as a template for the creation of aspects.

Attributes

see Aspect Attributes

Basic Property Aspect Type

The basic property aspect type is one of the aspect types supplied by **Structure Builder**. It holds a name and the type of an Advant object. As an Advant object may have several names, it may have several basic property aspects. You can refer to a specific one with the help of its name category, for example with Customer ID.

An Advant object may have for example a customer ID “Turbine A” and a location ID “Turbine A 2nd floor”.

Builder

A Builder is an application that can perform dedicated tasks on aspects. Builders can cooperate which each other via the **Aspect Request Broker**. Examples of Builders are: Structure Builder, Function Chart Builder, Parameter Builder.

Category

A category is a subtype of an aspect type. The name category for example is a subtype of a basic property aspect.

Child Object

Advant objects can be visualized in a pool or in a structure window. In a structure Advant objects may have a parent-child relation. A parent object may contain several child objects. In this way you can create a hierarchy of Advant objects. Child objects can be hidden when you compress the parent object.

Cooperating Mode

Builders can work in cooperating or independent mode. In cooperating mode Builders can communicate via the **Aspect Request Broker**. They are started by the **Structure Builder**, when you open a view of a selected aspect.

Copy

You can copy Advant objects between projects, structures, or within structures. In each case copy creates an additional Advant object.

Command Window

When you click in the object window the **More** button the so-called command window will be displayed. Depending on the selected aspect's type, it will show one or several commands. The command window offers at least the **Open** command. The same window will be displayed, if you click in the aspect area into a cell with the right mouse button.

Compressed Structure

For parent objects you can specify that the structure shall be displayed in compressed form. Then all successive child elements are hidden.

Database

The data of **Structure Builder** are stored in an **Oracle** database. To be able to access these data, a user must be registered as a database user. The registration can be performed with the **Project | Administration** menu command.

Data Sheet

Besides the data stored in the aspect registry, Structure Builder stores additional data in an own format. These data can be presented in data sheets. For data sheets the same spread sheet representation as for the aspect registry is used.

Drag and Drop

You can move, copy, or place Advant objects between or within structures by grabbing an object with the mouse and positioning it at the new location while the left mouse button is pressed. When you release the mouse button, the object will be copied, placed or moved, depending on additional keys you might have pressed during the operation: Alt: move; Ctrl: Copy; Shift: place. If no additional key is pressed, a default operation will be performed, which depends on source and destination.

Advant Object

Advant object Technology offers a methodology to model real world objects with Advant objects, aspects, and views. All entities you work with during the engineering process, like main plant equipment, components and devices, information entities like signals, or location entities like areas are referred to as Advant objects. Each Advant object may have several aspects.

EOSTB

EOSTB is a special database user (database administrator) which has the access rights to create and delete projects and to change user passwords. For project administration you have to log into the system as EOSTB user.

Expanded Structure

For parent objects you can specify that the structure shall be displayed in expanded form. Then successive child elements on the next lower level or on all levels are visible.

Independent Mode

Builders can work in cooperating and some in independent mode. In independent mode Builders work without **Aspect Request Broker** and **Structure Builder**. In this mode it is not possible to work with Advant objects, but with aspects only.

The Function Chart Builder for example can work in independent mode. Then it will be started by the Application Builder.

Menu

Menus are part of the menu bar. When you click with the mouse on a menu bar entry, the menu will be displayed, which shows one or several menu commands or a submenu. If you click on a menu command, the command will be executed.

Menu Bar

The menu bar is a bar below the main window's title bar. It holds the menu entries.

Move

To change the location of an Advant object in one of your structures, you can move it to another location in the same or in another structure.

Name Category

A basic property aspect type is subtyped by name categories. An example of a name category is Customer ID.

Object

see Advant object

Object Area

The aspect area is the upper part of a structure window (in its default representation). The lower part is the aspect area. The object area visualizes the hierarchy of Advant objects of a certain structure.

Object Name

The name of an Advant object.

Object Type

The type of an Advant object. When you create a new Advant object, you can select among several types.

Object Window

You will see the object window when you issue the **Object | Open** menu command or when you double-click an Advant object. In the object window you see the aspects and views of the selected Advant object.

Parent Object

Advant objects can be visualized in a pool or in a structure window. In a structure Advant objects may have a parent-child relation. A parent object may contain several child objects. In this way you can create a hierarchy of Advant objects.

Paste

You can insert Advant objects, that you have previously copied to the clipboard with the **Edit | Copy** menu command, at the currently selected object.

Place

You can place an Advant object somewhere in a structure. When you place an Advant object, you do not create a new object. The object gets a new structure aspect containing the information about the new structure position.

Pool

The pool is a list of all Advant objects. The order the elements are listed in that list is arbitrary.

Prefix

The prefix determines the type of a reference designation. Some prefixes are standardized:

=	Function reference designation
-	Product reference designation
+	Mounting location reference designation
++	Topological location reference designation

Within AdvaBuild Engineering Software the following designation is used:

#	OCS item designation

Besides these predefined prefixes, you are free to use your own prefixes.

Further on, the prefix will be used to concatenate relative reference designations.

Project Administration

Project administration covers all activities to administer projects, to assign database users, and to assign users to projects.

Project Global Data Aspect Type

At project creation time a project global data aspect will be created as an aspect of the project object. You cannot delete this aspect nor create another one. The project global data aspect type stores general information about a project.

Reference Designation

A reference designation designates an Advant object in a structure unambiguously (not checked by the system) with respect to its parent objects. Absolute reference designations consists of a concatenation of all relative reference designations.

Selected Pool

A selected pool is a special pool that is the result of a filter. It is a subset of the pool.

SQL Statement

SQL statements are used to specify filters for Advant objects. They are stored in files which you can select.

Status Bar

The status bar is a bar at the bottom of the application’s main window. It holds some status information like keyboard settings.

Structure

Advant objects can be related to each other hierarchically. These relations are visualized in a structure window. You can create several structures depending on your needs. Some predefined structures are available.

Structure Aspect Type

When you locate an Advant object in a structure, it will get an corresponding structure aspect, which will hold the information about the position within the structure and the object’s parent object.

Subtree

The part of a structure that holds all child objects of a certain (parent) object. It is also referred to as subtree.

Toolbar

The toolbar is a bar locate directly below the menu bar. It offers a quick access to some of the most commonly used menu commands.

User

A member of a project must be known by the database as user. Members of the Windows NT group **AdvaBuild_engineers** can be assigned as database users and can be mapped to projects.

View

An aspect may have several views. You can start a Builder on an aspect by opening one of its views. A node control software aspect as among others for example a node function chart and a node structure function chart view.

INDEX

A

- adding users 3-47
- administration 3-12, 3-44
- AdvaBuild_engineers 3-15, 3-46
- Advant Object Technology 3-5
- Advant objects 3-19
  - copying 3-19, 3-26, 3-30, 3-36
  - copying in selected pool 3-33
  - creating 3-69
  - deleting 3-38, 3-78
  - deleting in selected pool 3-33
  - displaying 3-65
  - drag and drop 3-30
  - filtering 3-84
  - follow object selection 3-75
  - hierarchy 3-69
  - icons 3-19
  - insert above 3-70
  - insert as child(ren) 3-70
  - insert below 3-70
  - introduction 3-5
  - layout 3-20, 3-60
  - moving 3-23, 3-26, 3-30, 3-37
  - name 3-70
  - name category 3-70
  - object window 3-75 to 3-76
  - placing 3-26, 3-30, 3-33
  - remove from structure 3-78
  - removing from structures 3-38
  - renaming 3-38, 3-77
  - selecting fonts 3-65
  - type 3-70, 3-77
- alignment 3-104
- arranging icons 3-95
- aspect area 3-16 to 3-17, 3-20 to 3-21, 3-43, 3-88, 3-90
  - cell alignment 3-104
  - column order 3-107
  - column width 3-106
  - default height 3-105
  - hide/show 3-91
  - row height 3-105
- aspect registry 3-76 to 3-77
- Aspect Request Broker 3-12, 3-23
- aspect types
  - aspect registry 3-76
  - attributes 3-22 to 3-23, 3-65
  - Basic Property 3-98
  - categories 3-70
  - filter options 3-86
  - filtering 3-86
  - hide 3-87
  - name category 3-77
  - Project Global Data 3-17 to 3-18
  - show 3-87
  - Structure 3-39, 3-99
  - subtypes 3-70
- aspects
  - aspect list 3-76
  - aspect registry 3-76 to 3-77
  - attributes 3-21
  - created on 3-77
  - default name category 3-61
  - default status 3-61
  - deleting 3-76, 3-101
  - introduction 3-5, 3-7
  - modified by 3-77
  - More command 3-98
  - name category 3-61
  - sorting 3-89
  - status 3-61, 3-77
- assigning users 3-46
- assigning users to projects 3-54
- attributes of aspects
  - editing 3-76
  - filtering 3-87
  - opening 3-76
  - selecting for display 3-65

B

- Basic Property aspect 3-98
- bitmap 3-82
- Builders 3-7, 3-50

C

- CAEE database 3-49
- cascading windows 3-95
- cell alignment in aspect area 3-104
- changing passwords 3-47
- Client/Server architecture 3-7
- closing projects 3-44
- closing windows 3-95
- column order 3-107
- column width 3-106
- Command Window 3-76

compressing structures 3-84
concatenation of reference designations 3-99
cooperating mode 3-9
copy 3-80
copy bitmap 3-82
copying Advant objects 3-26, 3-36
creating Advant objects 3-69
creating projects 3-48
creating structures 3-67
cut 3-79

D

data sheets 3-16, 3-22 to 3-23
database 3-45
    adding users 3-47
    assigning users 3-46 to 3-47
    CAEE 3-49 to 3-50
    changing password 3-47
    connect string 3-45
    deleting users 3-47
    ECAE 3-52
    EOSTB 3-52
    hard disk space 3-49
    hard disk free space 3-49, 3-52
    password 3-42
    selecting 3-42
    STB 3-49 to 3-50
    user name 3-42
    users 3-46
default height 3-105
default values
    saving 3-108
deleting Advant objects 3-38, 3-78
deleting aspects 3-76, 3-101
deleting database users 3-47
deleting projects 3-50
deleting structures 3-39, 3-67
deleting subtrees 3-78
drag and drop 3-30
    cursor images 3-30

E

engineering process 3-2
expanding projects 3-50
expanding structures 3-82
export 3-56
export project 3-56

F

features of Builders 3-7
filter
    Advant objects 3-84
    aspects 3-86
    parameters 3-86
    SQL statement 3-85
filtering aspects 3-86
fix column 3-108
follow object selection 3-75
font selection 3-103
font size 3-104
font style 3-104

H

hard disk
    space reserved 3-49
help
    contents 3-68
    on context 3-68
    release notes 3-69
hide aspect area 3-91
hierarchy of Advant objects 3-69

I

icons
    arranging 3-95
import 3-56
independent mode 3-9

L

layout
    Advant objects 3-60
    background colors 3-61
    removing structures 3-64
    selecting fonts 3-103
logon 3-44

M

modifier keys 3-32
More command 3-76, 3-98
mouse button
    right 3-17, 3-22, 3-24, 3-27, 3-37, 3-39
mouse button assignment 3-32
moving Advant objects 3-26, 3-37
multiple selection 3-21
multi-user environment 3-10

N
name category 3-61, 3-70, 3-77
name of Advant objects 3-70
network functions 3-10
networked PC 3-9

O
object area 3-16, 3-19, 3-21, 3-43, 3-90
object window 3-17, 3-75 to 3-76
open
    objects 3-75
opening
    structure window 3-67
opening views 3-75
Oracle database 3-45, 3-49

P
password
    users 3-42, 3-47
paste 3-80
paste special 3-80
place 3-81
placing Advant objects 3-26
Pool 3-15
predefined structures 3-67
project
    export 3-56
    upgrade 3-42, 3-54
projects
    adding 3-48
    administration 3-12, 3-15, 3-44
    assigning users 3-54
    available 3-47
    closing 3-44
    creating 3-15
    deleting 3-50
    expanding hard disk space 3-50
    logging into 3-44
    opening 3-41
    options 3-20, 3-60
    project name 3-42, 3-49
    types 3-4

R
reference designations
    absolute 3-39
    concatenation 3-99
    for aspects 3-39, 3-77
    for objects 3-39
    prefix 3-77
    relative 3-39
register aspect systems 3-50
Register new Builders 3-50
release notes 3-69
removing from structure 3-38, 3-78
renaming Advant objects 3-38, 3-77
reuse 3-5
right mouse 3-17, 3-22, 3-24, 3-37, 3-39
right mouse button 3-27
row height 3-105

S
save as 3-78
scalability 3-10
select all 3-82
Selected Pool 3-15
selected pool 3-16 to 3-17, 3-78, 3-85
selecting Advant objects
    continuous selection 3-26, 3-28
    disjoint selection 3-26, 3-29
    follow object selection 3-75
    mouse selection 3-26
settings
    save as default 3-108
show aspect area 3-91
split bar 3-20
split horizontally
    structure window 3-90
split vertically
    structure window 3-90
SQL statement 3-85
stand-alone PC 3-9
standard engineering solutions 3-5
status 3-61
status bar 3-59, 3-91
STB database 3-49
Structure aspect 3-99
structure window 3-19, 3-43, 3-62, 3-67
    split horizontally 3-90
    split vertically 3-90
structures
    adding 3-67
    compressing 3-84
    compressing all 3-84
    deleting 3-39, 3-67
    expanding 3-82
    expanding whole subtree 3-83
    introduction 3-7, 3-19

T

tile horizontally
    windows 3-95
tile vertically
    windows 3-95
toolbar 3-58, 3-91
type of Advant objects 3-70

U

unfix column 3-108
upgrade project 3-42, 3-54
user interface 3-10
user name 3-42
users 3-46 to 3-47
    assigning to projects 3-54

V

views
    introduction 3-5, 3-7
    opening 3-75 to 3-76
    views list 3-76

W

windows
    cascading 3-95
    closing 3-95
    tiling horizontally 3-95
    tiling vertically 3-95
Windows NT User Manager 3-15
word wrap 3-105
working methods 3-4
wrapping words 3-105

3BSE 013 932R201

October 1999